634720407
SOMERVILLE PUBLIC LIBRARY
3 1155 00780 1603

C
REF

GZA
Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

249 Vanderbilt Avenue
Norwood, MA 02062
T: 781.278.3700
F: 781.278.5701
F: 781.278.5702
www.gza.com

February 12, 2016
GZA File No: 01.00171521.15

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

Re: Draft Release Abatement Measure Plan
Construction-Related Remediation Activities
(Former) Everett Staging Yard
1 Horizon Way
Everett, Massachusetts
Release Tracking Number (RTN) 3-13341
Additional RTNs 3-17760 (38 Broadway, Everett, MA) and
RTN 3-1850(3 Charlton Street, Everett, MA)

REF
333
714
GZ

DRAFT

To Whom It May Concern:

GZA GeoEnvironmental, Inc. (GZA), on behalf of Wynn MA, LLC (Wynn MA), has prepared this Release Abatement Measure (RAM) Plan to describe those Response Actions pursuant to the Massachusetts Contingency Plan (MCP) that will be completed during the construction of the Wynn Resort in Everett at the former Everett Staging Yard Disposal Site (the Site) and neighboring properties (collectively referred to as the RAM Project Area). The Site is identified by the Massachusetts Department of Environmental Protection (MassDEP) as Release Tracking Number (RTN) 3-13341. A Site Locus Map is presented as Figure 1, and the properties that will be subject to the provisions of this RAM Plan are shown on Figure 2. Additional information about the location and MCP history of each of the properties is presented later in this document.

This RAM Plan has been prepared in accordance with 310 CMR 40.0444 of the MCP, and with the Limitations in Appendix A. The Plan will be submitted electronically through MassDEP eDEP online filing system. A copy of the RAM transmittal form (BWSC-106) is included in Appendix B.

EXECUTIVE SUMMARY

Soil, groundwater, and sediment at the former Everett Staging Yard Disposal Site and its vicinity have been contaminated by historic activities, including the former use of the Site as a chemical manufacturing facility. Response actions to be conducted under this RAM Plan will include the excavation of Contaminated Soil, the dredging of Contaminated Sediment, and/or the placement of clean fill materials at the properties identified in the Plan. As required by the MCP, the Plan provides for the appropriate management and disposal of Remediation Waste and Remedial Wastewater generated during construction activities, and describes the implementation of health and safety procedures to protect on-Site workers and off-Site residents. Further, because the RAM activities are associated with the construction of a structure, this RAM Plan also includes the findings of a focused site assessment, risk characterization and feasibility evaluation to support the eventual filing of a Permanent Solution with Conditions for the Disposal Site.

REF
333.
714
GZ

INTRODUCTION

The (former) Everett Staging Yard Site is located on the northern bank of the Mystic River in Everett, MA (Figure 3). The upland portion of the Site comprises approximately 21.75 acres of land, and the water-side portion comprises approximately 8.44 acres seaward of mean high water (MHW), including part of the Mystic River channel and an embayment in the southeast corner of the property. To facilitate discussion, different portions of the Site and adjacent areas are referred to in this report as follows:

- Disposal Site: as described in the MCP at 310 CMR 40.0006(1)(b), the term "disposal site" refers to a place or area where an uncontrolled release of oil and/or hazardous material... has come to be located." For the purpose of this report, Disposal Site or Site refers to the entire former Everett Staging Yard Disposal Site, identified by MassDEP as RTN 3-13341.

- Upland Property: the upland portion of the former Everett Staging Yard Disposal Site.

- Water-side Site: The water-side portion of the Disposal Site, where contaminants released from the Upland Property have come to be located in sediment in the Mystic River.

- Channel: A historically dredged (bottom contours generally on the order of -16 to -18 feet NAVD88) navigational channel within the embayment.

The Site is the proposed location of a resort to be developed by Wynn MA. The following components of the project will be conducted as part of the RAM:

- Earthwork and utility installation for a building with three levels of belowground parking, with a footprint of approximately 500,000 square feet;

- Earthmoving and grading for landscape and open space amenities, including a Harborwalk along the waterfront; and

- Earthwork and dredging to construct significant improvements along the currently structurally and ecologically degraded shoreline, including:

    - Replacement bulkhead comprised of concrete pile-supported deck above a stone slope revetment, along a section of the northwestern embayment shoreline;

    - Replacement steel sheetpile bulkhead along the northern and eastern embayment shoreline, in lieu of the existing deteriorated timber and stone bulkheads;

    - Waterfront access to the Site via new floating docking facilities to be constructed in the embayment; and

    - A "living shoreline" of restored salt marsh and vegetated coastal bank along the waterfront.

In addition to the Site, Wynn MA also controls contiguous parcels in its vicinity that will be developed to provide vehicular access to the resort. As shown on Figure 2, these lots include parcels 1, 2, and 3 formerly owned by the Massachusetts Bay Transportation Authority (MBTA) at 80 Broadway; properties at 20 and 38-50 Broadway; and a portion of the property at 3 Charlton Street. These properties, which lie outside the boundary of the former Everett Staging Yard Disposal Site, are referred to as "neighboring properties" in this RAM Plan. Property descriptions and a brief summary of the MCP release history for these parcels are provided later in this Plan. The following work at these parcels will be conducted as part of the RAM:

- Construction of the primary access driveway to the resort across Parcel 1 and the properties at 20 and 38-50 Broadway; and

DRAFT

- Construction of a service road across Parcels 2 and 3 and a portion of the 3 Charlton Street property.

The following sections of this submittal are intended to address the specific requirements for a RAM Plan under 310 CMR 40.0444.

PERSON ASSUMING RESPONSIBILITY FOR RAM (310 CMR 40.0444(1)(a))

The entity assuming responsibility for this RAM is Wynn MA, LLC. Information for Wynn MA's contact person is provided below:

Mr. Robert DeSalvio
President
Wynn MA, LLC
101 Station Landing, Suite 2200
Medford, Massachusetts 02155
Tel: 857-770-7801

On January 2, 2015, Wynn MA acquired the portion of the former Everett Staging Yard Disposal Site in Everett, Massachusetts. On February 5, 2015, Wynn MA filed an Eligible Person Submittal and a Revised Tier II Classification with MassDEP for RTN 3-13341.

Wynn MA also controls the other parcels (parcels 1, 2, and 3 formerly owned by the MBTA at 80 Broadway; properties at 20 and 38-50 Broadway; and the 3 Charlton Street property) included within the RAM Project Area. Remediation Waste generated during the RAM may be re-located from one property within the RAM area to another property owned by Wynn MA within the RAM area for temporary storage under the provisions of the MCP Section 310 CMR 40.0034(4).

DESCRIPTION OF RELEASE, SITE CONDITIONS AND SURROUNDING RECEPTORS (310 CMR 40.0444(1)(b)

The following sections provide a description of the Site and its vicinity, including surrounding receptors. Also included is a brief summary of the release history for each of the parcels within the RAM area, with a focus on MCP conditions that have implications for the proposed scope of work.

FORMER EVERETT STAGING YARD

Property Description and Surroundings

The Site is located at 1 Horizon Way in Everett, Massachusetts, at latitude 42.395 degrees north and longitude 71.069 degrees west (Figure 1). The Universal Transverse Mercator (UTM) coordinates are 4,695,683 meters north and 329,684 meters east. The Upland Property is an irregularly shaped parcel of land roughly bounded by Alford Street to the east, MBTA railroad tracks to the west, an MBTA bus repair and maintenance facility to the north, and the Mystic River to the south. The Site includes a peninsula of land that extends southerly into the Mystic River, and most of the small embayment located eastward of the peninsula (Figure 3).

The ground surface at the Site is generally flat with a gentle slope toward the southwest. Based on an April 2013 survey prepared by Harry R. Feldman, Inc. (Professional Land Surveyors), ground surface elevations at the upland property range from approximately 8 to 13 feet NAVD88. The Site is located within the Boston Basin, a regional depression of bedrock consisting primarily of Cambridge Argillite, a partially metamorphosed siltstone. Site conditions generally consist of fill over a variable sequence of naturally deposited organics, sand and gravel, and silty clay over weathered rock and bedrock. Filling over naturally deposited materials occurred in the area of the Site from the late 1800s through the early 1960s. More recent naturally deposited sediments along the shoreline include sand, silt, and organics.

DRAFT

The depth to groundwater ranges from approximately 4 to 10 feet. Groundwater at the Site flows generally toward the east on the southern portion of the Upland Property and generally toward the south on the northern portion of the Upland Property.

Access to the Upland Property is limited by the presence of a chain-link fence with two gates: one gate is in the eastern portion of the Site, along Horizon Way, and the second gate is located on the northern portion of the Site across an extension of Horizon Way.

The Site is adjoined to the northeast by a bus maintenance and repair facility operated by the MBTA; to the southeast by properties along Alford Street, including a vacant commercial building and facilities operated by the Boston Water and Sewer Commission (BWSC) and the Massachusetts Water Resources Authority (MWRA); to the southwest by the Mystic River; and to the northwest by railroad tracks for the MBTA Commuter Rail, beyond which are several large commercial/retail buildings associated with the Gateway Center. A residential neighborhood is located beyond the commercial properties abutting the southeast side of Alford Street.

According to a Massachusetts Geographic Information System (MassGIS) map, a copy of which is included in Appendix C, the Site is not located in or within 500 feet of a Zone II public water supply, potentially productive aquifer, a Zone A surface water body, an Interim Wellhead Protection Area, a protected wetlands habitat, or an Area of Critical Environmental Concern. Protected open space associated with Gateway Park is located approximately 400 feet to the northwest of the Site.

Release History

The following summary relies on information presented in prior reports submitted for the Disposal Site, including:

- Phase I Initial Site Investigation Report, Alford Street, Everett, Massachusetts, prepared by Consulting Engineers & Scientists, Inc. (CES) and dated January 15, 1997;

- Phase II – Comprehensive Site Assessment, Everett Staging Yard, Chemical Lane, Everett Massachusetts, DEP RTN 3-13341, prepared by Tetra Tech Rizzo (TTR) and dated December 26, 2007;

- Phase II Comprehensive Site Assessment, Everett Staging Yard, 1 Horizon Way, Everett, Massachusetts, MassDEP RTN 3-13341, prepared by GEI Consultants, Inc. (GEI) and dated February 10, 2012;

- Phase III Remediation Action Plan, Everett Staging Yard, 1 Horizon Way, Everett, Massachusetts, MassDEP RTN 3-13341, prepared by GEI and dated August 27, 2013;

- Release Abatement Measure Plan, Pre-Construction Activities, (Former) Everett Staging Yard, 1 Horizon Way, Everett, Massachusetts, RTN 3-13341, prepared by GZA and dated August 18, 2015;

- Release Abatement Measure Status Report, Pre-Construction Activities, (Former) Everett Staging Yard, 1 Horizon Way, Everett, Massachusetts, RTN 3-13341, prepared by GZA and dated December 21, 2015; and

- Supplemental Phase II Comprehensive Site Assessment, Former Everett Staging Yard Water-Side, Everett, Massachusetts, Release Tracking Number 3-13341, prepared by GZA and dated December 31, 2015.

Investigations conducted between 1995 and the present have identified several contaminants in soil, groundwater, and sediments at the Disposal Site, including metals, volatile organic compounds (VOCs), volatile petroleum hydrocarbon (VPH) fractions and target analytes, semi-volatile organic compounds (SVOCs), extractable petroleum hydrocarbon (EPH) fractions and target analytes, and polychlorinated biphenyls (PCBs). The sources of contamination at the Disposal Site include past industrial operations, leakage from a former aboveground storage tank (AST), and the placement of contaminated fill. According to historic reports, the Site was occupied by the Cochran Chemical Company, the Merrimac Chemical Company and the Monsanto

DRAFT

Chemical Company from the late 1800s until the late 1960s. The buildings on the land-side portion of the Site were razed in the 1970s. The land-side portion of the Site has been used primarily as a material storage and staging yard since the mid-1990s, when rock and fine-grained sediment ("tunnel muck") from the construction of the Deer Island Outfall was stockpiled on it in a 1- to 7-foot-thick layer. There are currently no buildings at the Site.

In 1995, Consulting Engineers and Scientists, Inc. (CES) of Lakeville, Massachusetts, performed a limited subsurface investigation at the Site prior to it being used as the tunnel muck stockpile area. Arsenic and lead concentrations in soil samples collected during the investigation exceeded the applicable MCP Reportable Concentrations (RCS-2). On January 18, 1996, O'Donnell Sand and Gravel ("O'Donnell"), the property owner at the time, submitted a Release Notification Form (RNF) to MassDEP, and MassDEP assigned RTN 3-13341 to the release. Later in 1996, the excavated tunnel muck and rock were stockpiled and/or spread across the upland portion of the Site. In mid-1999, tunnel muck from the Site was used to cap a separate portion of the former Monsanto property, located across the railroad tracks and north/northwest of the Site, as part of the construction of the Gateway Center Mall, but a 1- to 7-foot-thick layer of the tunnel muck remains at the Site.

In December 1996, CES conducted a Phase I Initial Site Investigation (ISI). Reported arsenic and lead concentrations in soil exceeded the applicable RCS-2 standards, and dissolved arsenic and lead in groundwater exceeded the RCGW-2 standard. In January 1997, on behalf of O'Donnell, CES submitted a Phase I ISI and Tier Classification (Phase I report) to MassDEP. The Disposal Site was classified as a Tier II Disposal Site. The Phase I report identified arsenic, lead, and low pH as contaminants of concern (COCs). O'Donnell submitted a Phase II Extension Request to MassDEP in February 1999 and sold the property to Mystic Landing, LLC (Mystic Landing) in 2001.

In 2001, on behalf of Mystic Landing, Rizzo Associates (a predecessor to Tetra Tech Rizzo, Inc. of Framingham, Massachusetts (Tetra Tech Rizzo)) performed a limited subsurface investigation at the Site, including the collection of soil and groundwater samples. The findings of the subsurface investigation were similar to CES's findings. Between 2005 and 2007, Tetra Tech Rizzo conducted additional subsurface investigations, including the collection of additional soil, groundwater and sediment samples. The results of these investigations were also generally consistent with those from previous sampling rounds.

In June and July 2007, Williams Environmental, Inc. (Williams) conducted a supplemental subsurface investigation at the Site, including the excavation of 40 test pits and the collection of soil, groundwater and sediment samples. As with previous analyses of environmental media conducted at the Site, lead and arsenic were the contaminants detected at the highest concentrations and with the greatest frequency.

In December 2007, on behalf of Mystic Landing, Tetra Tech Rizzo submitted a Phase II Comprehensive Site Assessment (Phase II CSA) and Tier II Extension Request to MassDEP. The Human Health Risk Assessment included in Tetra Tech Rizzo's CSA concluded that there was No Significant Risk (NSR) and No Substantial Hazard, as defined by the MCP, associated with the current use of the Site as a construction material storage yard or for similar uses that did not disturb the surficial layer of tunnel muck.

FBT Everett Realty, LLC (FBT) purchased the 1 Horizon Way property from Mystic Landing in October 2009. On February 11, 2010, GEI Consultants, Inc. (GEI) submitted an Eligible Person Certification and Revised Tier Classification Submittal to MassDEP on behalf of FBT. The Disposal Site remained a Tier II Disposal Site based on the Revised Tier Classification Submittal and, pursuant to 310 CMR 40.0570, the deadlines for conducting response actions at the Disposal Site were re-established. Wynn MA is also an Eligible Person as discussed below.

In February 2012, GEI submitted a Phase II CSA based only on data previously developed by others because GEI's access to the Upland Property was reportedly denied by the occupant. As part of the Phase II CSA, GEI conducted a Method 3 Risk Characterization which concluded that a condition of NSR to human health existed at the Site for most of the then current uses of the Site, but that NSR could not be demonstrated for foreseeable future Site uses. NSR could not be demonstrated for future commercial workers or future visitors exposed to Site-wide soils, for future construction workers exposed to Site-wide soils or

DRAFT

shallow groundwater, or for utility workers exposed to soil, shallow groundwater, or ambient air within a potential utility trench in a specific area near the northern corner of the Site.

Due to the delay in obtaining access to the Site, FBT filed a Notification of Delay with MassDEP, requesting that the deadline for the Phase III – Remedial Action Plan (RAP) be extended from February 2013 to June 2013, and that the deadline for the Phase IV – Remedy Implementation Plan (RIP) be extended from February 2014 to June 2014. FBT subsequently filed a second Notification of Delay requesting that the Phase III RAP deadline be extended to September 2013, and the Phase IV deadline be extended to June 11, 2015.

GEI conducted additional soil and groundwater investigations in December 2012 and March 2013. These investigations included the installation of a series of soil borings and monitoring wells on the land-side portion of the Site, and the collection and analysis of soil and groundwater samples. The results of the additional investigations were generally consistent with those previously documented. GEI also conducted a bench scale evaluation of in-situ solidification/stabilization (ISS) of soils as a remedial alternative for certain areas of the Site.

On August 30, 2013, FBT filed a Phase III RAP for the Site outlining the selected Remedial Action Alternatives (RAA). The Phase III RAP identified three areas of concern to be addressed to reach a Permanent Solution under the MCP on the land-side portion of the Site. As shown on Figure 3, the remediation areas include two areas of elevated arsenic and/or lead concentrations in soil and one area where low pH groundwater had increased the potential for contaminant migration. Response actions, comprising excavation and off-Site disposal of arsenic-impacted soil, and ISS in the low pH area, are currently being performed at the Site in accordance with GZA's RAM Plan for Pre-Construction Activities dated August 18, 2015.

Upland Pre-Characterization Program

Since site redevelopment plans included a substantial subgrade parking garage, GZA developed a field program to pre-characterize soil within the excavation. The analytical data from this program were used to support a focused risk evaluation of worker exposure during construction, and to estimate the volume of material that would have to be transported to each type of disposal facility (unlined, lined, and/or out-of-state landfills) based on the geochemical profile of the soil.

GZA developed a 50-foot sampling grid within the area of excavation, with grid locations identified by alpha-numeric designations (i.e., A01, A02, A03, etc.). Prior to drilling, one boring location in each grid was pre-marked using a handheld Trimble GeoExplorer® 6000 series GeoXH™ high-accuracy (10cm) GNSS GPS unit. Borings were generally marked within the center of each grid; however, certain locations were altered due to access issues, or for geotechnical considerations.

Between October 15, 2014, and March 13, 2015, GZA engaged New England Boring, Inc. (NEB) to execute borings at the Site with up to four truck-mounted drill rigs using cased (drive and wash with telescoping casing) drilling techniques. During drilling, larger diameter casing (typically 5" diameter) was advanced to the top of the natural material, after which smaller diameter casing (typically 4" diameter) was advanced inside the larger diameter casing down to the bottom of the borings. This drilling methodology was chosen to limit the potential to "draw down" contaminants from the fill material into the underlying natural material.

For sample collection purposes, GZA assumed that fill material would be impacted by Site-related Oil and/or Hazardous Material (OHM) and would require disposal or reuse at an out-of-state facility, while natural materials could potentially be reused at an in-state lined or unlined landfill. Based on the sampling grid developed, and in order to meet the assumed sampling frequencies, GZA collected samples from the fill material within each boring at a rate of approximately one sample per 3.3 vertical feet of soil below the ground surface (equivalent to one sample per 500 tons), and from the natural material at a rate of approximately one sample per 5 vertical feet of soil underlying the fill material (equivalent to one sample per 750-800 tons). The samples from the borings, as well as 32 soil samples from pre-existing stockpiles of material present at the Site, were submitted under chain-of-custody to ESS Laboratory of Cranston, Rhode Island (ESS) for the following suite of chemical analyses:

- RCRA 8 metals by EPA Method 6010/7471;
- Total Petroleum Hydrocarbons (TPH, by modified EPA Method 8100);
- Polychlorinated Biphenyls (PCBs, by EPA Method 8082);
- VOCs, by EPA Method 8260;
- Semi-Volatile Organic Compounds (SVOCs, by EPA Method 8270);
- Toxicity Characteristic Leaching Procedure (TCLP) as needed; and
- pH and conductivity.

The following additional analyses were run on the samples from the fill material:

- Herbicides by EPA Method 8151;
- Pesticides by EPA Method 8081; and
- Reactivity and flashpoint.

Additionally, approximately 5% of the samples from the natural materials were submitted for laboratory analysis for herbicides by EPA Method 8151 and for pesticides by EPA Method 8081.

In all, approximately 1,700 samples were collected during the pre-characterization process. Samples from the borings were collected as composites over the interval sampled, with the exception of samples for VOC analysis which were collected as grab samples. Samples from the stockpiles were collected as 5-point composites, with the exception of the samples for VOC analysis which were collected as grab samples. Appendix D presents the information collected during the pre-characterization program, including figures showing the sampling locations; a table summarizing the analytical results; boring logs; and a complete set of laboratory analytical reports.

Based on observations during the pre-characterization program, the garage excavation will extend through the contaminated fill material and into the natural soils below. The natural soils that will be left in place after the RAM are significantly less contaminated than the accessible and potentially accessible soils (defined under the MCP as soil in unpaved areas between 0 and 15 feet below ground surface (bgs)) at the Upland Property.

Due to changes in project design, additional pre-characterization sampling is ongoing. However, given the amount of data already collected at the Site, it is GZA's opinion that the additional data are unlikely to indicate environmental conditions significantly different than those encountered to date.

Water-Side Site

Historic releases of OHM at the Site have also resulted in impacts to sediments in the Mystic River and embayment (i.e., the Water-Side Site). A Stage II Ecological Risk Characterization prepared by Menzie-Cura in 2006 concluded that the OHM in sediment presented a significant risk of harm to the benthic (bottom dwelling) community. The nature and extent of OHM at the Water-Side Site were further delineated by recent Supplemental Phase II assessment activities conducted by GZA, the results of which were presented in a Supplemental Phase II Comprehensive Site Assessment (CSA) Report in December 2015. At the time of preparation of this RAM Plan, the Supplemental Phase II CSA Report is pending public review and comment. The key findings and conclusions are summarized below.

DRAFT

The main goals of the Supplemental Phase II were to delineate the limits of the Water-Side Site, and to develop clean-up goals to define what portion of Water-Side Site would need to be remediated in order to achieve a condition of NSR. To achieve these goals, GZA performed an extensive sediment sampling and analysis program in the Mystic River and embayment near the Upland Property. GZA also collected sediment samples from locations in the Mystic River that are remote from the Former Everett Staging Yard Site; these remote samples were collected to represent what is referred to in the MCP as Local Conditions (essentially background conditions, as influenced by past human activities) within the river. Based on patterns in OHM concentrations within the Water-Side Site sediments, and on statistical comparisons between Water-Side Site data and the Local Conditions samples, GZA identified arsenic, lead and mercury as the main Contaminants of Potential Ecological Concern in sediment associated with the Site, and delineated an area of approximately 8.44 acres as the Water-Side portion of the Disposal Site.

Selected surficial sediment samples were run for chemical analyses and for 28-day, whole sediment toxicity tests using the marine species *Leptocheirus plumulosus*, and the toxicity test results and chemical data were used to develop clean-up goals for arsenic, lead and mercury. Based on these Site-specific clean-up goals, it was concluded that approximately 6.82-acres of the Water-Side Site would need to be remediated to achieve a condition of NSR.

Supplemental Phase III and Phase IV reports for the Water-Side Site are scheduled to be submitted later in 2016.

1 HORIZON WAY

Property Description and Surroundings

This property, referred to as 22 Chemical Lane in MassDEP's Sites Database, lies within the Disposal Site Boundary for RTN 3-13341, but was briefly used as a staging area for concrete-encased utilities excavated from a property in Boston in November 1999. MassDEP was subsequently notified of a potential release associated with this temporary use, details regarding which are provided below.

RTN 3-18971

This RTN was issued by MassDEP in November 1999, after it was discovered that the concrete-encased materials brought to the Everett location from Boston included transite, which is an asbestos-containing material (ACM). Asbestos abatement measures were implemented in December 1999 in accordance with a work plan approved by MassDEP, and included the removal and off-Site disposal of approximately 20 cubic yards of material. A Class A-1 RAO (Permanent Solution with no restrictions) was filed in January 2000 for this RTN. Therefore, there are no implications associated with this RTN for the upcoming RAM activities.

20 and 38-50 BROADWAY

Property Description and Surroundings

These parcels are contiguous, extending from southwest (#20) to northeast (#38-50) along the northwest side of Broadway. 20 Broadway Street ("Lot D") is used primarily for vehicle storage. The property at 38-50 Broadway Street is occupied by a convenience store, a Mobil gas station, and Dunkin' Donuts shop. The RAM Plan refers to this property as 38-50 Broadway based on the deed for the parcels. However, the location is referred to in some records as 30 Broadway; therefore, for the purposes of completeness, MassDEP files pertaining to 30 Broadway were also reviewed and are summarized in this RAM Plan.

The property at 38-50 Broadway has been operated as a gas station since the mid-1900s; the existing Mobil station was built in the late 1990s. Records indicate that there are three underground storage tanks (USTs) at the property. The USTs include one 14,000-gallon gasoline UST, one 10,000-gallon gasoline UST, and one 6,000-gallon diesel UST. GZA did not observe surficial evidence of USTs (i.e., fill ports, vent pipes, pavement repairs, etc.) on the other parcels.

DRAFT

The MBTA bus maintenance facility is to the northwest; Horizon Way, across which is Lot 2, is to the southwest of 20 Broadway; and various commercial and industrial properties are to the southeast across Broadway and Bow Street. The property to the northeast of 38-50 Broadway is occupied by the Honda Cars of Boston dealership; the portion of that property immediately abutting the 38-50 Broadway property is a fenced, unpaved area used to store vehicles available for sale by the dealership.

Release History – 20 Broadway

No releases have been reported for the 20 Broadway property. It is not a disposal site as defined by the MCP. However, given the known historic filling and urban, industrialized history of the area, it is anticipated that soils at this property may be impacted by urban and historic fill. Therefore, as a conservative measure, soil and groundwater generated during construction activities at this location will be managed in accordance with the procedures established in this RAM Plan.

Release History – 30 Broadway

MassDEP's Sites database indicates that two releases have been reported for the address of 30 Broadway, aka Parcel F, under RTNs 3-2526 and RTN 3-14553, and that RAO statements without any associated deed restrictions have been filed for both RTNs. A site plan included with the RAO for RTN 3-2526 shows the RTN pertaining to a location north of the 38-50 Broadway property, on the current Honda Cars of Boston car storage lot to the north of Dunkin' Donuts. Similarly, a site locus map included with the RAO for RTN 3-14553 references a location north of the 38-50 Broadway parcel. As such, neither of these releases was located within the RAM Project Area and they have no bearing on the work to be conducted under the RAM.

Release History – 38-50 Broadway

The property at 38-50 Broadway consists of an approximately 29,440-square-foot rectangular parcel of land located north of the intersection of Broadway and Horizon Way in Everett. The property is currently improved, from north to south, with a Dunkin' Donuts restaurant, a gasoline filling station, and a convenience store. The gasoline station appears to have been operated under a number of different entities, including Citgo, Mobil and Sunoco.

RTN 3-17760, listed in MassDEP's Sites Database as 38-48 Broadway

In December 1998, MassDEP issued RTN 3-17760 for a release associated with a former underground storage tank at the property. The tank was removed, and subsequent response actions included the excavation and off-site disposal of approximately 585 tons of petroleum-contaminated soils. As part of a Class A-3 RAO, an AUL was filed in 2001, and was subsequently amended in 2009 to restrict the following activities and uses at this location:

- Residential use of the property;
- The use of the property for growing fruits or vegetables intended for consumption;
- The use of the property for a school or day care facility; and
- Any other activity that would result in uncontrolled exposures to soils at the property, unless evaluated and approved by a Licensed Site Professional (LSP).

Further, the AUL requires "periodic (at least annual) visual monitoring of the property to ensure that the pavement surface is generally intact, without areas of significant pavement deteriorations to the extent that underlying soils can be readily contacted by employees or visitors to the property." The AUL also requires any person conducting utility, excavation, or subsurface construction work at the 38-48 Broadway site to retain an LSP to evaluate the proposed work, evaluate the need for precautionary measures, and to develop, as necessary, a Soil Management Plan and/or a Health and Safety Plan. The extent of the AUL area is shown on Figure 2.

As required by the terms of the AUL for RTN 3-17760, a plan has been developed to manage soil generated at 38-50 Broadway and will be followed during RAM implementation at this property. The plan is included in Appendix E.

RTN 3-18291, listed in MassDEP's Sites Database as 38 Broadway

A second RTN (3-18291) was generated during redevelopment activities in late 1998 when the characterization of soils for off-site disposal indicated that concentrations of certain polynuclear aromatic hydrocarbons (PAHs) and lead in stockpiled soils were above MCP Reportable Concentrations. The stockpiled soil was disposed of off-site under the RAM provisions of the MCP, and a focused assessment of soils in the vicinity of the proposed building (the current Dunkin' Donuts) was conducted. The RTN is currently classified as DEPNFA (No Further Action) by MassDEP. GZA notes that the AUL for RTN 3-17760 covers the entire property, including the boundaries of RTN 3-18291.

RTN 3-27571, not listed in MassDEP's Sites Database

A third RTN (3-27571) was generated on March 15, 2008, after gasoline was released to the ground surface as a result of a customer overfilling a vehicle gasoline tank. The release was reported to MassDEP, and was remediated using absorbent materials. The release appears to have been limited to the immediate area of the pump island. No soil or groundwater sampling was conducted. Review of the sales receipt suggested that the release was less than the 10-gallon MCP Reportable Quantity, and a Release Notification Retraction was submitted to MassDEP on March 27, 2008. RTN 3-27571 does not appear on MassDEP's online database.

PARCELS 1, 2 AND 3 (FORMERLY PART OF THE MBTA REPAIR FACILITY AT 80 BROADWAY)

Property Description and Surroundings

Parcel 1 is a paved lot with a guard station building located in the southeastern portion and a small shed-like building in the southern portion of the property. Metal storage containers in the vicinity of the shed were used to store bus parts. The parcel is abutted by additional paved portions of the MBTA bus maintenance facility to the north and west, by Horizon Way to the southwest, and by the 20 and 38-50 Broadway properties to the northeast.

Parcel 2 consists of a strip of paved land located along the northeastern border of the MBTA property, extending approximately to the 3 Charlton Street property; various commercial properties along Broadway adjoin this parcel to the east.

Parcel 3 consists of a strip of paved land located along the western border of the MBTA property; railroad tracks adjoin this property to the west. An electrical tower is located in the south-central portion of the parcel.

Release History

Several RTNs have been identified for 80 Broadway Street, the address of the MBTA's bus maintenance facility; some cover the property as a whole and some apply only to smaller areas within the property. The following RTNs pertain to Parcels 1, 2, and/or 3 within the RAM area.

RTN 3-23351

On November 6, 2003, MassDEP was notified of the presence of elevated concentrations of arsenic (35 mg/kg) and PAHs in soil, and RTN 3-23351 was issued for this incident. The source of the elevated PAHs and arsenic was attributed to the presence of coal ash associated with urban fill. OHM concentrations in groundwater were reported to be below reportable concentrations. Much of Parcel 1 is within the Disposal Site Boundary for RTN 3-23351. It was concluded that it was infeasible to conduct remediation to approach or achieve background concentrations of OHM, but that the OHM posed NSR for potential future residential receptors, construction/utility workers, and maintenance workers. A Class B-1 RAO (i.e., no restrictions on future

DRAFT

activities or uses) was filed for RTN 3-23351 in 2005. However, as a conservative measure, any soil or groundwater generated during construction will be tracked and managed in accordance with the provisions of this RAM Plan.

RTN 3-24832

MassDEP files contain a report entitled, "Utility Related Abatement Measure (URAM) Completion Report, Release Tracking Number 3-24832, NSTAR Electric & Gas, 115 kV Electric Power Transmission Line Construction, 80 Broadway, Everett, Massachusetts," dated January 2006 and prepared by NSTAR Electric & Gas (NSTAR). According to the report, NSTAR constructed a subsurface 115kV electric power transmission line connecting to the above-ground transmission line located on the MBTA property. The line extends from the Mystic Station electric power generating facility along Alford Street and Broadway to Chemical Lane to the MBTA property. Because the MBTA property was a listed MCP site (RTN 3-23351, related to the presence of arsenic and PAHs in soil, as discussed above), on May 6, 2005 NSTAR notified MassDEP of the proposed work, and MassDEP issued RTN 3-24832 for the subsurface utility work. Approximately 400 tons of soil was generated during the construction work; most of this was re-used as backfill, but approximately 69 cubic yards of soil was transported off-site for use as daily cover material at a Massachusetts landfill. Water generated during construction dewatering was recharged on-site within 100 feet of the excavation.

3 CHARLTON STREET[1]

Property Description and Surroundings

The property is occupied by a multi-tenant commercial structure consisting of several interconnected buildings that were formerly used for industrial purposes. The 3 Charlton Street property is adjoined by railroad tracks, across which are the Gateway Center and vacant land, to the northwest and north; by Brickyard Lane, across which are a multi-story parking garage and newly constructed condominium buildings, to northeast and east; and by the MBTA bus repair property to the south.

Construction activities associated with this RAM Plan will be implemented at only a portion of the 3 Charlton Street property, as shown on Figure 2.

Release History

The following four RTNs have been issued for 3 Charlton Street (aka 9 Charlton Street):

RTN 3-1850, listed in MassDEP's Sites as 9 Charlton Street

This RTN was issued to the former New England Bolt site on October 28, 1987 due to the presence of elevated concentrations of arsenic and beryllium in site soil. A Class A-3 Response Action Outcome Statement, was submitted to MassDEP on June 9, 2005. An AUL covering the northern portion of the property, filed as part of the RAO for RTN 3-1850, allows all commercial or industrial uses of the property. It prohibits the re-location of petroleum-impacted soil to another location on the property without the development and implementation of a Soil Management Plan; prohibits the use of the property as a residence, school, nursery, daycare or recreational facility without an LSP Evaluation Opinion stating that such use is consistent with maintaining a condition of NSR; and prohibits the construction of a new building without the use of a vapor barrier and a passive sub-slab venting system to prevent the migration of VOCs into the building.

As required by the terms of the AUL, a plan has been developed to manage soil generated at 3 Charlton, and this plan will be followed during RAM implementation at this property (Appendix E).

---

[1] The RAM Plan refers to the property as 3 Charlton Street based on the deed for the parcel; however, RTNs associated with this location were previously filed under 9 Charlton Street.

DRAFT

RTN 3-19103, listed in MassDEP's Sites Database as 9 Charlton Street

A second RTN was issued on December 21, 1999 due to the detection of the volatile organic compound 1,1-dichloroethylene in the groundwater at a concentration of 17 ug/L. This RTN was closed by linking it to RTN 3-1850 on December 18, 2000.

RTN 3-24168, listed in MassDEP's Sites Database as 9 Charlton Street

This RTN was issued on August 20, 2004, due to the detection of reportable concentrations of VOCs, petroleum fractions, and benzo(a)anthracene, a PAH compound, in the soil. The RTN was closed by linking it to RTN 3-1850 on October 13, 2004.

RTN 3-24699, listed in MassDEP's Sites Database as 9 Charlton Street

An additional RTN was issued on March 14, 2005, due to the detection of reportable concentrations of petroleum hydrocarbons in soil and groundwater. A Downgradient Property Status (DPS) Opinion relative to this release was submitted to MassDEP on June 9, 2005. The DPS attributed alkane solvents detected in the groundwater to a release at the adjoining former Hub Fabric Facility. The DPS area overlaps portions of the areas of petroleum releases identified on the 3 Charlton Street property. If new building(s) are constructed in this area, a vapor barrier and passive sub-slab ventilation system must be included; however, there are no implications for the proposed redevelopment activities at this location.

RAM IMPLEMENTATION (310 CMR 40.0444(1)(c))

OBJECTIVES AND SCHEDULE

The objective of this RAM is to establish procedures that will be followed for managing, treating and/or disposing of impacted soil, sediment, and groundwater generated during excavation, dredging, and related activities associated with the redevelopment of the properties within the RAM Project Area.

Work under the RAM is currently anticipated to begin in April 2016, and its anticipated duration is approximately 24 months.

The following sections describe how the RAM will be implemented to meet the requirements of the MCP and related regulatory approvals received for this project.

SITE PREPARATION

Prior to the initiation of the RAM activities, sedimentation and erosion controls will be set up in accordance with the August 2015 Notice of Intent filed for the Wetlands Protection Act (WPA) Order of Conditions authorizing these RAM activities (MassDEP File # 022-0098). The erosion controls will include:

- Crushed stone construction vehicle exit/entrance;
- Silt fence;
- Diversion ditches/berms;
- Sediment basins;
- Seeding, mulching or other soil stabilization methods; and
- Staked coir roll / filter sock or tube.

DRAFT

Perimeter erosion controls will be installed downgradient of earthwork areas, including work within the coastal restoration area, where a staked filter sock was designed to allow for overflow during high tide.

HEALTH AND SAFETY PROTOCOLS

Excavation work in the RAM areas will be conducted by personnel trained to handle contaminated materials per Occupational Safety and Health Administration (OSHA) Regulation 29 CFR 1910.120. Procedures will be followed to protect the health and safety of all on-site workers and the community.

RAM SCOPE OF WORK

The activities conducted under this RAM will take place in three areas: the Upland Property, the Water-Side Site, and neighboring properties controlled by Wynn MA (Figures 4A and 4B). The following sections summarize the scope of work in each of these areas.

Upland Property

The most extensive soil- and groundwater-generating activities will be associated with the construction of a 25-story luxury resort building, a one- to two-story podium building with gaming and associated retail facilities, a 3-story subgrade parking garage, and related utilities and open space amenities at the Upland Property. Redevelopment will entail excavation to depths of 21 to 26 feet bgs across a footprint of approximately 500,000 square feet. In areas outside the building footprint and paved areas (i.e., the open space areas), sufficient soil will be excavated to allow for the placement of at least 3 feet of imported clean fill material below the final surface grade. The building footprint, roadways and other paved areas will be underlain by a minimum thickness of one foot of clean material, including the building foundation and surface covers (e.g., pavement, concrete).

In the course of the excavation, soil and miscellaneous boulders, rubble, debris, and former subsurface infrastructure components will be removed and will be managed as described later in this RAM Plan. The earthwork for the building foundations and garage is anticipated to result in the removal of the approximately 225,000 cubic yards of fill; 50,000 cubic yards of naturally occurring granular material; 115,000 cubic yards of clay; and 100,000 cubic yards of organic material. Pre-characterization data have indicated that soils left in place following the excavation will consist of a mixture of the naturally deposited granular materials, clay and organics, and will have OHM concentrations significantly lower than the overlying fill material being excavated. The depth of the excavation will be driven by the structural needs of the project, and is expected to result in the removal of some volume of uncontaminated natural soils below the fill (i.e., soil with concentrations below RCS-1 standards and/or at natural background levels). Soil re-use and disposal will be governed by the provisions of the Remediation Waste Management Plan in Appendix E.

Given the depth of the excavation, the project will also involve construction dewatering. At the present time, GZA estimates that the initial rate of groundwater discharge will be on the order of 500 gallons per minute (gpm), and will decrease to a steady state flow rate of 50-100 gpm once sufficient drawdown depths have been achieved. All water pumped from the excavation will be sent through an on-Site water treatment system designed to reduce OHM concentrations to below National Pollutant Discharge Elimination System (NPDES) discharge criteria. The OHM concentrations in the treated groundwater will also be below the MCP RCGW-2 notification thresholds applicable at the Site, i.e., after treatment the water will no longer meet the definition of Contaminated Groundwater per Section 310 CMR 40.0006 of the MCP.

Most of the treated water generated during the RAM will be discharged in accordance with a NPDES permit that will be obtained prior to the start of dewatering. However, treated groundwater may also be discharged to the subsurface along the western and/or northern boundary of the property. Additional information about groundwater management and treatment is included in the Remediation Waste Management Plan in Appendix E.

DRAFT

Notable open space amenities at the Upland Property will include landscaped plazas and pathways, a pavilion, and a 20-foot-wide publicly accessible Harborwalk paralleling the Site's waterfront along the Mystic River and embayment. The installation of the Harborwalk and related facilities, and the restoration of the shoreline, will be conducted in accordance with regulatory approvals from the MassDEP Waterways Chapter 91 Program, MassDEP Wetlands Section 401 Water Quality Certification, and the local Conservation Commission.

As shown on Figure 4A, the Harborwalk will be constructed above three different waterfront stabilization elements as described below:

- Along the Mystic River, the Harborwalk will be located above a 650-foot-long living shoreline designed to restore and enhance the deteriorated riverbank. To create the living shoreline, existing unsuitable soils, mixed invasive and early successional vegetation, and debris will be removed from an approximately 40- to 50-foot-wide margin along the river and will be handled as described later in this document. The excavated shoreline materials will include small volumes of soil previously stabilized during ISS activities, as well as near-shore sediments. Debris within this area is anticipated to include timber, brick, asphalt, concrete, former bulkheads, and retaining walls along the existing shoreline. The coastal margin will be restored by the installation of various stabilization enhancements consisting of natural materials (e.g., coconut-fiber-wrapped stone/gravel mix) overlain by clean imported fill material, after which the shoreline will be revegetated with native coastal plantings and new salt marsh.

- To the north of the living shoreline, along the western edge of the embayment, the Harborwalk will be supported on an approximately 300-foot-long pile-supported deck. The deck will consist of pre-cast concrete piles and deck planks, with a cast-in-place concrete deck topping. The pile-supported deck will be constructed over a stone slope revetment, and a new stormwater outfall pipe will be installed below the pile supported deck and revetment.

- Further north along the embayment, the Harborwalk will be supported on a steel sheetpile bulkhead system, with tierods extending landward to a sheetpile deadman. The bulkhead will be penetrated by two adjacent stormwater drainage outfalls; one of these will be a new stormwater conveyance to handle treated stormwater from the Upland Property, while the other outfall is the existing outfall that handles drainage from the abutting MBTA property.

Water-Side Site

The primary feature to be constructed in the Water-Side Site is a new public docking facility located at the head of the embayment. This facility will include a pile-supported floating dock system with an ADA-compliant gangway and ramp system. Based on the size of the proposed floating docking system and the anticipated drafts of the vessels that would be accessing the facility, navigational dredging to achieve a post-dredge depth of approximately ten feet below MLW (-15 feet NAVD88) is required. The planned navigational dredge footprint lies within the alignment and side slopes of the former navigational channel within the embayment.

Prior to dredging, between 50 and 60 deteriorated pilings will be removed from the waterway. In addition, a timber bulkhead comprising an additional 100 to 200 batter piles, as well as a sunken timber barge, will be removed from the dredge footprint. The pile removal will comply with the terms of the project-specific Water Quality Certification. Holes remaining after pile removal will not be filled, with the exception of remnant creosote-treated pile locations, where remaining stumps or holes will be covered with clean sand.

Remnants of construction debris such as timber, brick, asphalt, concrete block, and concrete bulkheads and retaining walls at the existing shoreline will likely be encountered during shoreline construction and dredging activities. Individual concrete structures, such as concrete mooring blocks, will be removed whole to the extent practicable. However some concrete structures, such as dolphin pile caps, may require limited demolition to break the structures into manageable sizes for removal.

DRAFT

Appropriate controls will be used to collect debris from the demolition and to transport the material to an off-Site disposal facility.

Following the removal of piles and other obstructions, mechanical dredging will be conducted from approximately elevation zero to fifteen feet below the existing mudline, resulting in the removal of approximately 17,500 cubic yards of sediment within an area of approximately 68,000 square feet. This includes small volumes of sediment that will be removed during the construction of the waterfront stabilization structures described above. In accordance with the terms of the draft Chapter 91 Determination for this project, dredging operations will be supervised by a dredging inspector approved by MassDEP. Furthermore, in accordance with the Water Quality Certification issued by MassDEP, dredging operations will comply with a Dredged Material Management Plan, which will govern the method of dredging and types of equipment, turbidity monitoring, dewatering methods, water treatment, dredged material transfer, and Best Management Practices (BMPs) to be implemented during the project.

The sediment will be dredged using an excavator or crane equipped with an environmental clam shell bucket. Due to the silty nature of the sediment, the clam shell bucket will be fitted with rubber seals and overlapping sides to limit the quantity of sediment that could flow into the water column when the dredged sediment is conveyed into the accompanying collection barge or scow. This type of operation results in a reduction in the amount of turbidity during construction as compared to a standard clam shell bucket.

Turbidity barriers will be installed around the work area to contain residual sediment suspended in the water column. The turbidity barriers will include pervious fabric, such as a geotextile, combined with ballasting at the bottom of the barrier. This design limits the risk of having the fabric lift in the current and allows water to flow through, while retaining silt within the confines of the barrier. Intermediate vertical floats will also be placed on the turbidity barrier. The floats are designed to lift the bottom section of the curtain at low tide so that the bottom edges remain close to the sediment mudline and do not “rake” the sediments, resulting in the turbidity barrier becoming a turbidity source.

During in-water work, turbidity monitoring will be conducted to comply with the requirements of the Water Quality Certification for the project and in accordance with the Dredged Material Management Plan. As required by the Water Quality Certification, pre-dredge monitoring will be conducted to establish baseline conditions. Once work starts, the turbidity will be measured inside and outside the turbidity barrier, as well as at least 50 feet away from the dredge area (to assess background conditions). The measurements will be taken at or near the mudline, at the midpoint of the water column, and at the surface. If there is evidence of a turbidity plume outside the barrier, the Wetlands Program will be notified and mitigating measures including additional turbidity controls and/or adjustments to work practices will be implemented.

Sediment removal will be conducted only during those times of the year (September 16 through February 14) permitted by State and Federal agencies so as to reduce possible adverse impacts to the ecosystem. The dredged sediment will be loaded into a barge or scow and managed as described in the Remediation Waste Management Plan (Appendix E).

Neighboring Properties

Construction activities at the neighboring properties within the RAM Project Area will be largely related to the construction of primary and secondary vehicular access to the Upland Property (Figure 4B). Primary vehicular access will be at a new signalized intersection on Broadway (Route 99), via a driveway to be constructed across Parcel 1 and the properties at 20 and 38-50 Broadway. This primary driveway will be a four-lane boulevard (two lanes in each direction) with a landscaped island, marquee sign, period lighting, sidewalks, and bicycle accommodations. In addition, a service driveway for employee shuttle buses, delivery vehicles, service vehicles, and emergency vehicles will be located further north on Broadway at the existing signalized intersection with Beacham Street, and will be constructed across Parcels 2 and 3 and the 3 Charlton Street property. Construction of these driveways is anticipated to result in the generation of some impacted soil and groundwater, which will be managed in accordance with the Remediation Waste Management Plan in Appendix E.

DRAFT

Additional excavation associated with utility replacement work may be conducted on other portions of the adjoining MBTA property. This work will be conducted as a URAM.

REMEDIATION WASTE MANAGEMENT (310 CMR 40.0444(1)(d))

Remediation Waste, including soil, groundwater, sediment and associated debris, that is generated during the course of this RAM will be handled in accordance with the attached Remediation Waste Management Plan (Appendix E). All Remediation Waste will be tracked under the primary RTN for this project, i.e., RTN 3-13341 for the former Everett Staging Yard Site.

ENVIRONMENTAL MONITORING PLAN (310 CMR 40.0444(1)(e))

The following environmental monitoring plan will be implemented during RAM activities at the Site.

Real time particulate (dust) monitoring will be conducted with an AirLogics automated real-time Site perimeter air monitoring system operated throughout the duration of the RAM. . The data collected by the AirLogics system will be used to evaluate compliance with the Site perimeter limits for dust described below, and to identify any need to suspend or modify remediation activities as a result of RAM-related air emissions. The perimeter air monitoring system will operate on a continuous, 24-hour basis until soil excavation and backfilling activities associated with the RAM have been completed.

The automated perimeter air monitoring system will consist of individual monitoring stations with associated analytical instrumentation, a meteorological system, a computer control system, and an alarm system linked to the analytical instrumentation by an integrated communication/telemetry package. The meteorological station will be used to identify which stations are upwind, downwind, or crosswind of Site activities on a real-time basis.

The analytical instrumentation within each perimeter station will consist of a Respirable Particulate Meter for the measurement of dust as a surrogate for PAHs and metals. The Respirable Particulate Meters will be housed in weather-tight enclosures. The system will operate on solar power, with on-board battery backup. The following is a description of each of the key analytical instruments:

- Respirable Particulates

Direct-reading real-time particulate meters (DustTrak) will be used to monitor particulate (dust). The measurement of dust levels will be accomplished using infrared electromagnetic radiation to sense airborne particles. The dust meter can be configured to respond only to dust particles < 10 micron in diameter (PM10), dust particles < 2.5 microns (PM2.5), or total suspended particulate. For this project, the particulate meters will be configured to measure PM10. The limit of detection is 1 μg/m^3 (microgram per cubic meter).

- Meteorological System
- An on-Site meteorological tower (RM Young sensors) will be used to measure wind speed, direction, dry-bulb temperature, and relative humidity. The central computer system will receive continuous information from the meteorological system and compute a 2-minute running average wind speed and direction value. The 2-minute running average wind direction will be used to identify which of the monitoring stations is upwind, downwind, or crosswind.
- Computer Control System

Data generated by the instrumentation and the meteorological station, as well as operational parameters, will be continuously uploaded via radio telemetry links to a central computer system which will be located in the project trailer or some other secure location with continuous electrical power. The central computer system will communicate with each perimeter monitoring station every minute to obtain the latest data values from the individual sensors. The retrieved data will then be displayed on

the central computer screen, and stored in a database along with the meteorological data and other operational status information. The monitoring data will be automatically archived and used to print out summary graphs at the end of each day.

- Communications

The system will utilize a proprietary software package to allow for communication between the instruments, environmental control equipment, meteorological station, alarm display, and the central computer. Communication will be accomplished with radio telemetry links operating on a fixed frequency licensed to AirLogics by the FCC.

The system will be configured to generate 15-minute time-weighted averages of particulate levels. This set-up will include alarm conditions for PM10 at 1.4 mg/m^3 over upwind background, along with warning level alarms designed to alert project personnel of potential air quality issues. The particulate PM10 action levels have been selected based on Site-specific soil-derived dust exposure point concentrations (EPCs) developed by GZA. Documentation of the risk evaluation is included in Appendix F.

Weekly reports depicting a graphical summary of the results of the real time monitoring will be automatically printed out at the end of each week, and GZA's on-Site personnel will prepare a daily summary of AirLogics system data. Weekly summary sheets will be included in the subsequent RAM Status Reports and/or Completion Report.

DUST AND ODOR CONTROL MEASURES

Measures will be employed throughout the work to limit dust generation, including the covering of trucks hauling soil off the RAM Project Area and the covering of roll-off containers and temporary stockpiles at the end of each day. A truck wheel washing station will be installed near the construction exit to limit the tracking of materials from the RAM Project Area onto public roadways. As needed, construction entrances and roadways will be swept. Should PM10 action levels be exceeded in any 15-minute interval despite these measures, work will be halted to assess the potential cause or causes of the exceedance and corrective actions will be taken as necessary. Corrective actions may include, but are not limited to, alteration of work practices to limit dust generation or the application of water for dust suppression. Should odors be encountered during dredging and/or dredged material management, the dredged materials will be covered to the extent practicable and odor-suppressing foam will be applied to work surfaces as mitigative measures.

ADDITIONAL INFORMATION

REQUIRED PERMITS (310 CMR 40.0444 (1)(f))

The following permits and regulatory approvals must be obtained prior to RAM implementation:

- Massachusetts Environmental Policy Act (MEPA) Certificate, received for the project on August 28, 2015;
- Everett Conservation Commission Order of Conditions (MassDEP File # 022-0098), received September 24, 2015.
- MassDEP Waterways Program Chapter 91 Written Determination, Waterways Application Number W15-4480-N, draft issued January 22, 2016.
- MassDEP Wetlands Program Water Quality Certification X266262, Wetlands File No. 22-0098, issued January 22, 2016.
- United States Army Corps of Engineers Section 10 and Section 404 Individual Permit, application filed September 8, 2015, approval pending.
- National Pollution Discharge Elimination System (NDPES) Construction General Permit for projects exceeding 1 acre, will be obtained prior to the start of work.

DRAFT

- NDPES Remediation General Permit for groundwater discharge, will be obtained prior to dewatering.

Other local permits for construction-related activities (e.g., trenching, electrical permits, building permits) will be obtained by the contractor prior to initiation of the work. In addition, DigSafe will be notified by the contractor prior to subsurface activities that may encounter utilities.

IMMEDIATE RESPONSE ACTION PLAN

As described in earlier sections of this RAM Plan and in the Remediation Waste Management Plan in Appendix E, Best Management Practices (BMPs) will be implemented throughout the RAM. These include the installation and maintenance of erosion and sedimentation controls in the upland areas and turbidity barriers around in-water work areas; measures to monitor and control odors and dust; stockpile management procedures; and decontamination of vehicles leaving the RAM Project Area. However, despite these BMPs, the potential exists for spills that may require notification to MassDEP. In addition, given the long industrial history of the Site, there is also a potential for discovering previously unknown historical releases that may trigger notification criteria under the MCP. Such notifications will be made promptly and in accordance with the requirements of the MCP and any project-specific permits.

The 2-hour and 72-hour notification provisions of the MCP also require the prompt implementation of Immediate Response Actions (IRAs), which must be conducted in accordance with an IRA Plan approved by MassDEP. An IRA Plan describing the actions that will be implemented if certain common IRA conditions are encountered during the implementation of the RAM is included as Appendix G of this RAM Plan for public review and comment. In the event that a 2-hour or 72-hour notification condition is encountered, MassDEP will be notified within the appropriate timeframe, and GZA will begin IRA activities as presented in the plan and as orally approved by MassDEP.

LSP SEAL AND SIGNATURE (310 CMR 40.0444(1)(g))

The seal and signature of the Licensed Site Professional (LSP) for this RAM Plan (Lawrence Feldman, LSP #8107) are provided on the attached transmittal forms in Appendix B.

CERTIFICATION FOR GREATER THAN 1500 CUBIC YARDS OF SOIL (310 CMR 40.0444(1)(h))

In accordance with Section 40.0442(5) of the MCP, Wynn MA has indicated that it has sufficient financial resources to manage greater than 1,500 cubic yards of excavated materials in the manner and time frames specified in 310 CMR 40.0030.

ADDITIONAL INFORMATION FOR A RAM THAT INCLUDES THE CONSTRUCTION OF A STRUCTURE (310 CMR 40.0442(3))

In addition to the required elements of the RAM Plan provided above, Section 310 CMR 40.0442(3) of the MCP and MassDEP's guidance document *Construction of Buildings in Contaminated Areas (WSC-00-425),* dated January 26, 2000, require that certain evaluations be completed within and adjacent to the footprint of any proposed structure that could prevent or impede the implementation of response actions in the future. At this Site, the building to be constructed under the RAM would limit future access to subsurface soils and groundwater. Therefore, each of the following sub-sections evaluates post-RAM conditions beneath and adjacent to the structure in terms of the specific criteria established by the MCP.

SITE ASSESSMENT

Guidance document WSC-00-425 states that, in order to be in compliance with the MCP, a focused site characterization must be conducted within and adjacent to the footprint of the proposed building and associated subsurface structures to adequately define the nature and degree of contamination. This requirement has been met by the extensive upland pre-characterization program conducted within the footprint of the proposed structure at the Upland Property as described earlier within this RAM Plan. The program included the collection and analysis of more than 1,700 soil samples in an area of less than 10 acres. Of

DRAFT

these, approximately 700 samples were collected from fill material that will be excavated during the RAM, 500 samples were collected from native material that will be excavated during the RAM, and approximately 500 samples were collected from the underlying native material that will be left in place beneath the building following construction.

The results of the focused site characterization indicated that metals concentrations in soil beneath the proposed building footprint were lower than in the remediation areas being addressed under the August 2015 RAM Plan, and that no soil samples exceeded the Site-specific acute risk value for arsenic of 2,684 mg/kg developed as part of the Phase III RAP. The data further indicated that OHM concentrations were significantly lower in the native soils underlying the impacted fill material at the Upland Property; therefore, the removal of the fill material during RAM activities will effectively remediate soil conditions beneath the building footprint. The analytical data collected during the pre-characterization program were used to support the evaluations and findings in the following sub-sections.

RISK CHARACTERIZATION

Appendix H of this RAM Plan presents a focused risk assessment that meets the requirements of the MCP set forth in WSC-00-425. That guidance document requires that a focused risk assessment be conducted for the area within and adjacent to the footprint of proposed building(s) and associated subsurface structures to adequately characterize the nature of risks to construction workers, surrounding populations, and future occupants of the building, and to ensure that such risks are within the limits permitted by the MCP. The risk assessment is required when a building is constructed on a disposal site for two reasons: (1) to show that the construction of the building will not pose a Significant Risk to workers constructing the building or to future building occupants; and (2) to assist in demonstrating that necessary future remedial actions will not be limited or precluded by the presence of the building. Each of these conditions is further discussed below.

Risk To Construction Workers and Future Building Occupants

As shown in Appendix H, construction workers working at the Upland Property were assumed to encounter soil via dermal contact, incidental ingestion, and inhalation of soil-derived fugitive dust, and to be exposed to contaminants in groundwater via dermal contact and inhalation of ambient air. As a conservative approach, only the OHM concentrations from the fill material (which are higher than the OHM concentrations in the underlying native soils) were used in the risk calculations. Construction workers at the Water-Side Site were assumed to encounter sediment via dermal contact and incidental ingestion and to be exposed to contaminants in surface water via dermal contact. The risk calculations indicate that OHM concentrations in soil, groundwater, surface water and sediment do not pose a Significant Risk to the health of construction workers during the work, nor to future utility workers or construction workers at the Site.

The risk characterization also qualitatively evaluated the potential risks to future building occupants, including guests and workers at the resort, and to other visitors at the Site. During the RAM, impacted soils will be removed to a depth of approximately 25 to 30 feet bgs within the building footprint, exposing the relatively un-impacted native soils beneath. Outside the building footprint and paved areas, sufficient soil will be excavated at the Upland Property to accommodate at least 3 feet of clean fill material. Therefore, following the completion of construction, paving, and landscaping, and with the implementation of an AUL to restrict disturbance of subsurface soil, residual OHM-impacted material will not be accessible to future human or environmental receptors at the Upland Property, resulting in a condition of NSR.

Focused Remedial Program and Impact of Building on Any Necessary Future Remedial Actions

As described in this RAM Plan, construction of the building will result in the remediation of approximately 500,000 cubic yards of impacted soil by excavation and off-Site disposal. Following the completion of these activities, no additional remedial actions will be necessary within the building footprint. Therefore, the presence of the building will not have an adverse impact on future MCP response actions at the Site.

DRAFT

DRAFT

FEASIBILITY EVALUATION

The guidance document requires that a focused feasibility study be conducted for the area within and adjacent to the footprint of the proposed building to determine if it is feasible to reduce soil contaminant levels to concentrations that achieve or approach a background condition, and if so, to ensure that such remediation is conducted before or during construction of the overlying portions of the building. By removing impacted fill materials within the building footprint and exposing relatively unimpacted underlying natural materials below, this RAM will result in soil concentrations approaching background within and adjacent to the planned building footprint; therefore this feasibility study is not necessary.

REDUCTION OF EXPOSURE POINT CONCENTRATIONS TO BELOW UCLS

The guidance document states that, for sites where the Exposure Point Concentration of soil contaminants beneath a proposed building will be greater than applicable Upper Concentration Limits (UCLs) specified at 310 CMR 40.0996(7), a formal Phase III evaluation of remedial alternatives must be conducted on at least the portion of the site within and adjacent to the footprint of the proposed building. At this Site, the OHM concentrations in soil beneath the planned building footprint are and continue to be below applicable UCLs; therefore, no additional evaluation or remedial efforts are necessary to meet this requirement.

SOURCE CONTROL

The guidance document states that, at those sites where placement of the building structure will preclude further investigative or remedial efforts, sufficient data must be obtained to demonstrate compliance with performance standards relating to source control within and adjacent to the footprint of the building structure. Based on the large amount of pre-characterization data available, no uncontrolled sources of OHM have been identified at the Upland Property.

MANAGEMENT OF NAPL

No Non-Aqueous Phase Liquid (NAPL) has been identified at the Disposal Site; therefore, the requirements for NAPL management do not apply.

EVENTUAL ACHIEVEMENT OF A LEVEL OF NSR FOR THE ENTIRE DISPOSAL SITE

The remedial response actions being conducted at the Upland Property under the August 18, 2015 RAM Plan are consistent with the Recommended Remedial Action Alternative (RRAA) presented in the Phase III Remedial Action Plan filed by GEI Consultants in August 2013 for RTN 3-13341. A condition of NSR is anticipated at the Upland Property following the completion of the August 2015 RAM, along with the placement of barriers (clean fill, building foundation, roadways) that control direct access to underlying soils, and the filing of an AUL. The soil removal and disposal described in this RAM Plan are not required to achieve a condition of NSR, but are an incidental and substantial benefit of the planned construction.

Achieving a condition of NSR in the Water-Side Site will require completion of additional in-water response actions that are independent of the construction activities to be managed under this RAM Plan; these in-water remedial activities will be conducted in accordance with the Phase III and Phase IV provisions of the MCP with the objective of attaining a Permanent Solution for the Site.

PUBLIC NOTIFICATION

Following the designation of the Site as a Public Involvement Plan (PIP) Site on April 28, 2015, a PIP was developed to provide opportunities for public involvement throughout the MCP process. The plan establishes protocols for the submittal of information to local information repositories, establishment of a Site mailing list, notifications to public officials and local residents, and public comment periods and public meetings. The following sections describe how this RAM Plan complies with each of the provisions of the plan.

LOCAL INFORMATION REPOSITORIES

Four local information repositories have been established for the project - at the Parlin Memorial Library in Everett, the Shute Memorial Library in Everett, the Boston Public Library Charlestown Branch, and the Somerville Public Library. Draft copies of this RAM Plan were made available for public review at each of these repositories; a draft was also published online at www.wynnineverett.com/public_documents.html.

SITE MAILING LIST AND NOTIFICATIONS TO PUBLIC OFFICIALS AND RESIDENTS

A mailing list has been established for the Site under the PIP. Notices will be sent to each of the parties on the mailing list to inform them of the availability of the draft RAM Plan, the duration of the associated public comment period, and information about how to submit comments regarding the draft.

PUBLIC COMMENT PERIOD, INCLUDING PUBLIC MEETING

Consistent with the PIP provisions, the submittal of a draft of this RAM Plan was followed by a 20-day public comment period. During the comment period, a public meeting will be held in the City Council Chamber at Everett City Hall, 484 Broadway, on February 17, 2016, to present the draft report to the community and other interested parties. A summary of the comments received from the public, and responses to each comment, will be included as an appendix to the final version of the RAM plan.

NOTIFICATION TO LOCAL OFFICIALS

As required by Section 310 CMR 40.1403(3)(d), notice to local officials will be provided regarding the purpose, nature, and expected duration of the RAM within 20 days prior to its implementation.

If you should require any further information concerning the planned RAM activities, please do not hesitate to contact the undersigned at (781) 278-3700.

Very truly yours,
GZA GEOENVIRONMENTAL, INC.

David E. Leone Senior Project Manager	Albert J. Ricciardelli Consultant/Reviewer

Lawrence Feldman, LSP
Senior Principal

Attachments:

Figure 1	Site Locus
Figure 2	Properties within RAM Boundary
Figure 3	Site Plan
Figure 4A	Construction Plans – Upland Property and Water-Side Site
Figure 4B	Construction Plans - Neighboring Parcels within RAM

DRAFT

Appendix A	Limitations
Appendix B	Transmittal Forms BWSC106
Appendix C	MassGIS Map
Appendix D	Pre-Characterization Program data table, figures, boring logs, and analytical reports
Appendix E	Remediation Waste Management Plan
Appendix F	Derivation of Site-Specific Perimeter Dust Action Levels
Appendix G	Immediate Response Action (IRA) Plan
Appendix H	Focused Risk Assessment
Appendix I	PIP Comments and Responses to Comments

\\GZANOR\Jobs\170,000-179,999\171521\171521-15.DEL\Construction RAM Plan\Draft Construction 2016-02-11 Wynn Everett RAM Plan.docx

DRAFT

Appendix A	Limitations
Appendix B	Transmittal Forms BWSC106
Appendix C	MassGIS Map
Appendix D	Pre-Characterization Program data table, figures, boring logs, and analytical reports
Appendix E	Remediation Waste Management Plan
Appendix F	Derivation of Site-Specific Perimeter Dust Action Levels
Appendix G	Immediate Response Action (IRA) Plan
Appendix H	Focused Risk Assessment
Appendix I	PIP Comments and Responses to Comments

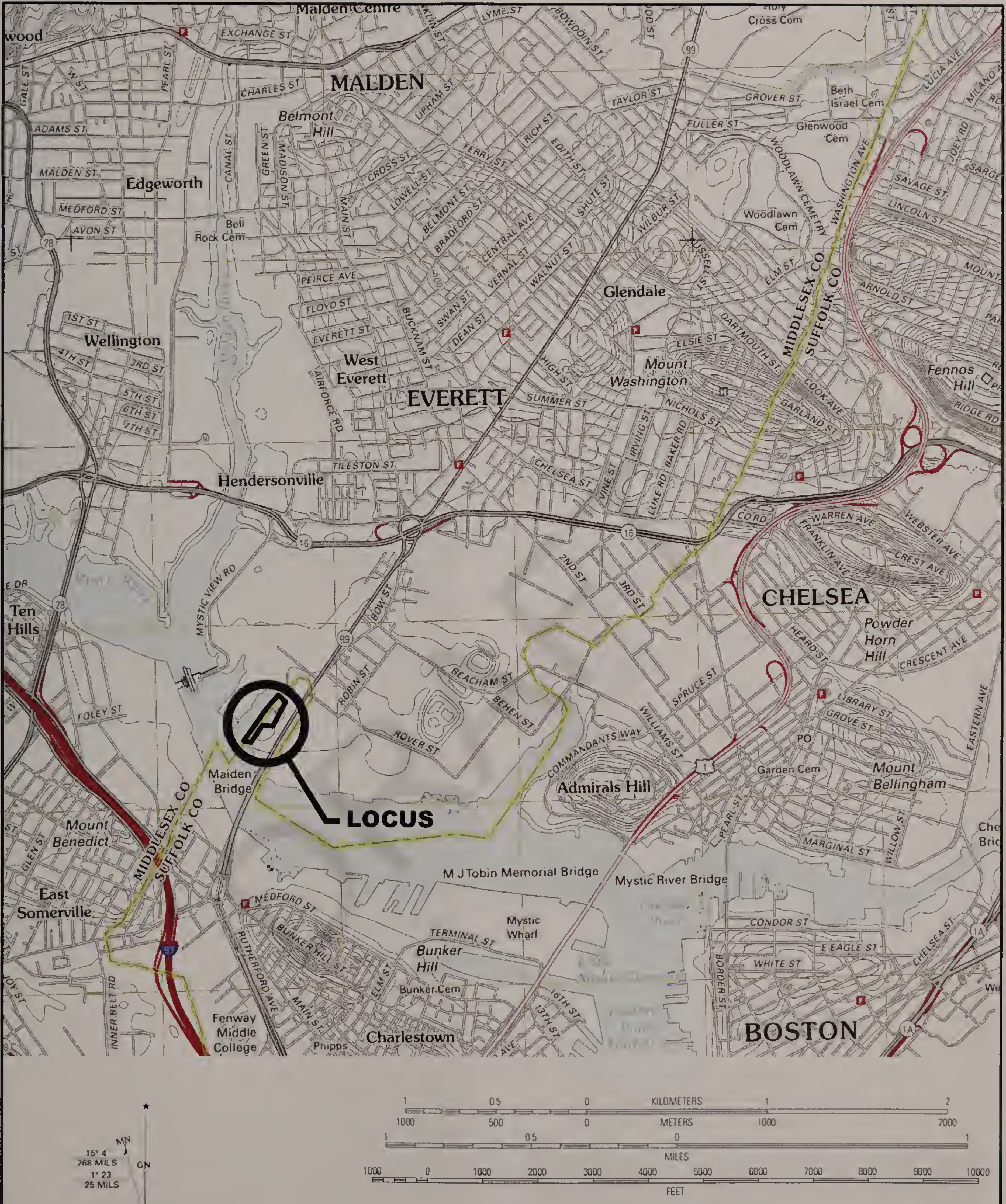
\\GZANOR\Jobs\170,000-179,999\171521\171521-15.DEL\Construction RAM Plan\Draft Construction 2016-02-11 Wynn Everett RAM Plan.docx

DRAFT

DRAFT

FIGURES

© 2016 – GZA GeoEnvironmental, Inc. GZA–J:\BRANCH OFFICES\01\01.0171521.00 EVERETT LAND DEVELOPMENT\FIGURES AND CAD\REMDIATION CAD\RAM CAD FOR VIJAY\FIGURE 1 – LOCUS PLAN.DWG LOCUS PLAN FEBRU



CONTOUR INTERVAL 10 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

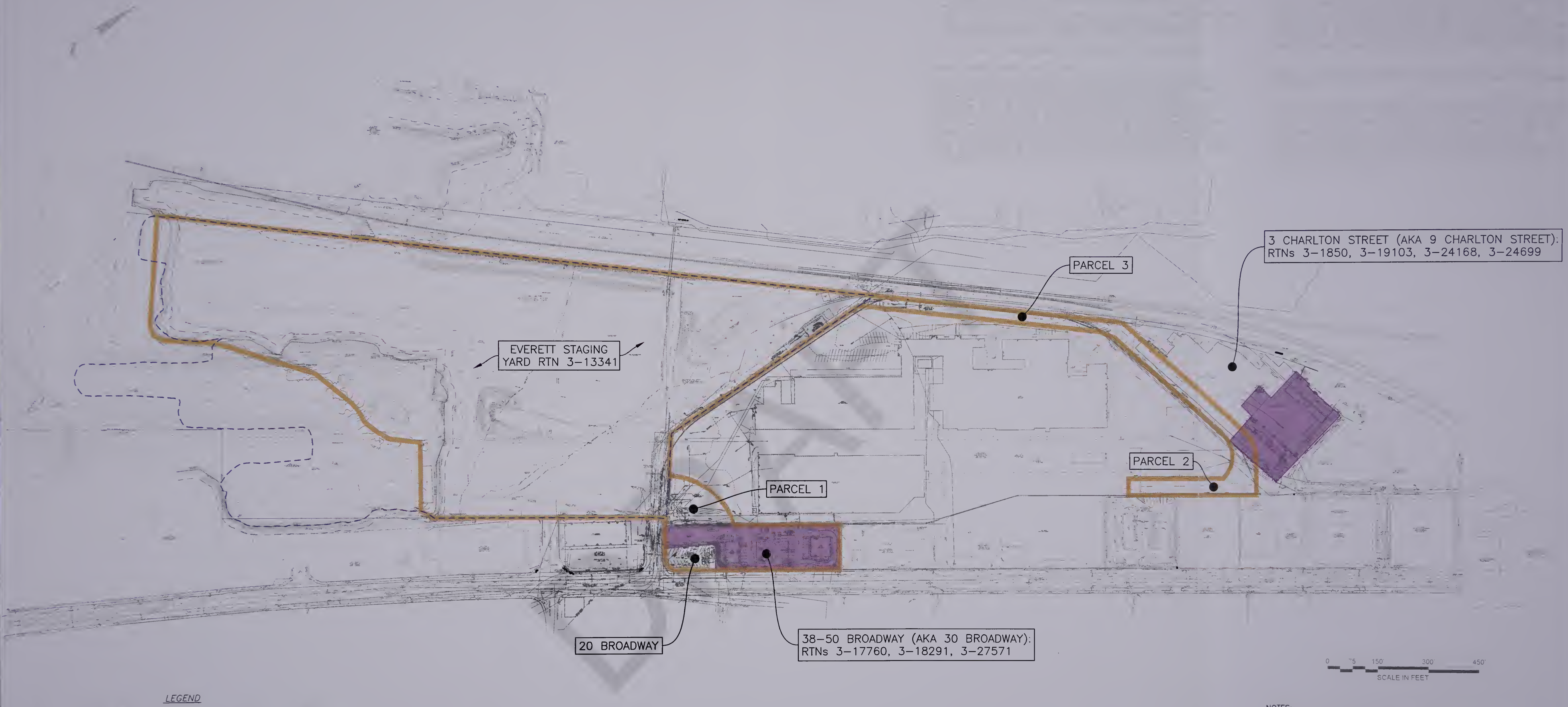
WYNN EVERETT
1 HORIZON WAY
EVERETT, MASSACHUSETTS

PREPARED BY:
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR:
WYNN MA, LLC

SITE LOCUS MAP

PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE
DESIGNED BY: VKR	DRAWN BY: JJZ	SCALE: AS SHOWN	1
DATE: FEBRUARY, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	SHEET NO. 1 OF 4


3 CHARLTON STREET (AKA 9 CHARLTON STREET):
RTNs 3-1850, 3-19103, 3-24168, 3-24699
PARCEL 3
EVERETT STAGING YARD RTN 3-13341
PARCEL 2
PARCEL 1
20 BROADWAY
38-50 BROADWAY (AKA 30 BROADWAY):
RTNs 3-17760, 3-18291, 3-27571
0
75
150
300
450
SCALE IN FEET
LEGEND

NOTES:

1. AULs ARE SHOWN ONLY ON PROPERTIES WITHIN RAM BOUNDARIES; ADDITIONAL AULs EXIST IN THE VICINITY.
2. BASE PLAN FROM FELDMAN PROFESSIONAL LAND SURVEYORS PLAN TITLED "EXISTING CONDITIONS PLAN, BROADWAY (ROUTE 99), EVERETT, MASS." DATED MARCH 20, 2015.

LEGEND

🟪	AUL AREA (APPROXIMATE)
– – –	FORMER EVERETT STAGING YARD DISPOSAL SITE BOUNDARY (RTN 3-13341)
▬	RAM PROJECT AREA BOUNDARY

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WYNN EVERETT
1 HORIZON WAY
EVERETT, MASSACHUSETTS

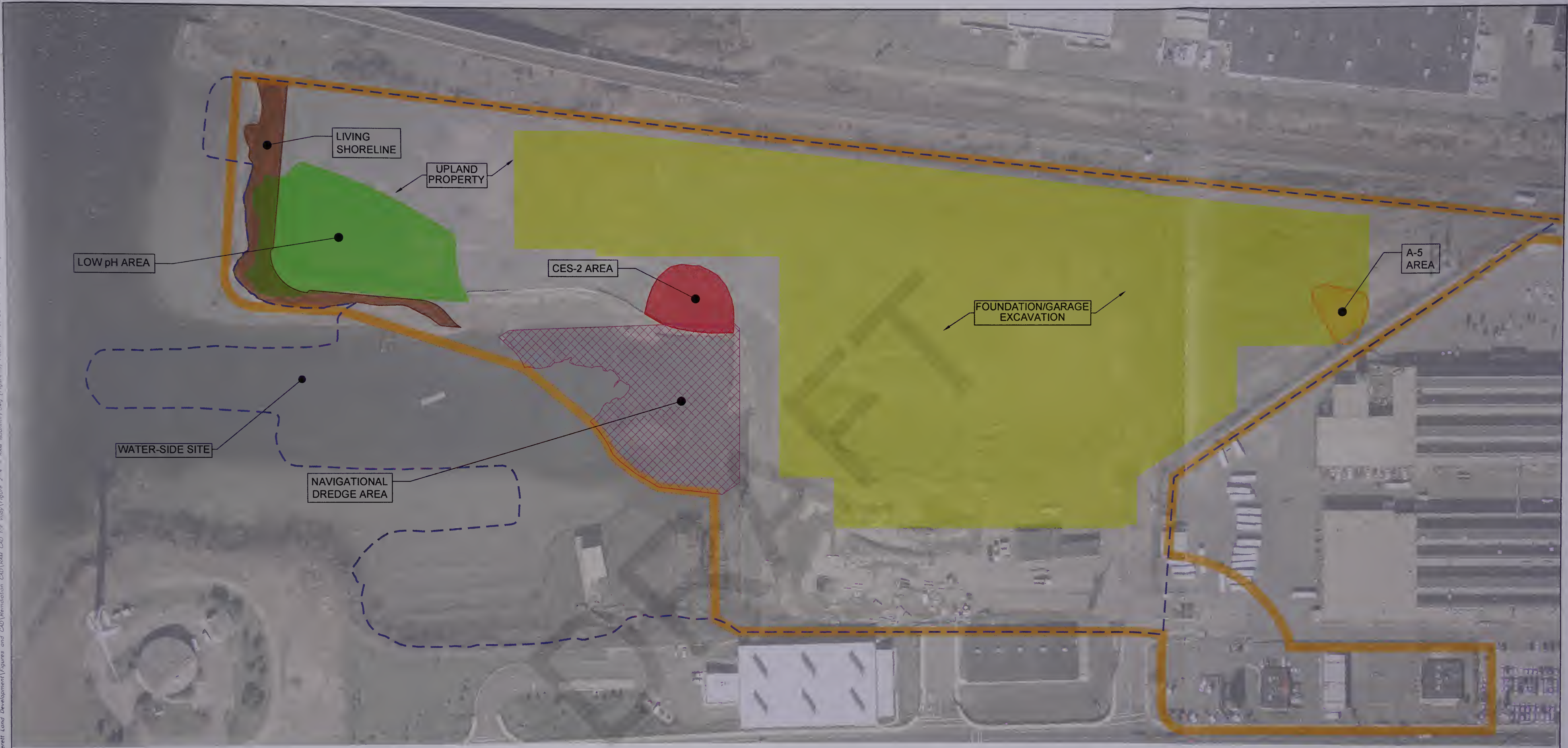
PROPERTIES WITHIN RAM BOUNDARY

PREPARED BY
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR
WYNN MA, LLC

PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE 2
DESIGNED BY: VKR	DRAWN BY: JJZ	SCALE: AS SHOWN	
DATE: FEBRUARY, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	SHEET NO. 2 OF 4

© 2016 - GZA GeoEnvironmental, Inc. GZA-J:\Branch Offices\01\01.0171521.00 Everett Land Development\Figures and CAD\Remdiation CAD\RAM CAD for Vijay\Figure 2-4 - RAM Boundary.dwg [Figure 2] February 10, 2016 - 10:39am joshua.zoll



LEGEND

🟥	CES-2 AREA (ELEVATED ARSENIC AREA – EXCAVATION AND OFF-SITE DISPOSAL – AUG 2015 RAM)
🟩	LOW pH AREA (IN-SITU SOLIDIFICATION/STABILIZATION – AUG 2015 RAM)
🟧	A-5 AREA (ELEVATED ARSENIC AREA – EXCAVATION AND OFF-SITE DISPOSAL – AUG 2015 RAM)
🟨	BUILDING EXCAVATION FOOTPRINT (SUBSURFACE GARAGE – IMPACTED FILL MATERIAL AND A PORTION OF THE UNDERLYING NATURAL SOILS TO BE EXCAVATED)
🟫	LIVING SHORELINE – IMPACTED SURFICIAL SOIL TO BE EXCAVATED AND REPLACED WITH CLEAN MATERIAL
▨	NAVIGATIONAL DREDGE FOOTPRINT
━	RAM PROJECT AREA BOUNDARY
– –	FORMER EVERETT STAGING YARD DISPOSAL SITE BOUNDARY (RTN 3-13341)

NOTES:

1. BASE PLAN FROM FELDMAN PROFESSIONAL LAND SURVEYORS PLAN TITLED "EXISTING CONDITIONS PLAN, BROADWAY (ROUTE 99), EVERETT, MASS." DATED MARCH 20, 2015.
2. AERIAL IMAGE OBTAINED FROM MASSACHUSETTS OFFICE OF GEOGRAPHIC INFORMATION (MASSGIS) USGS COLOR ORTHO IMAGERY DATED 2013/2014.

0 50' 100' 200' 300'
SCALE IN FEET

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WYNN EVERETT
1 HORIZON WAY
EVERETT, MASSACHUSETTS

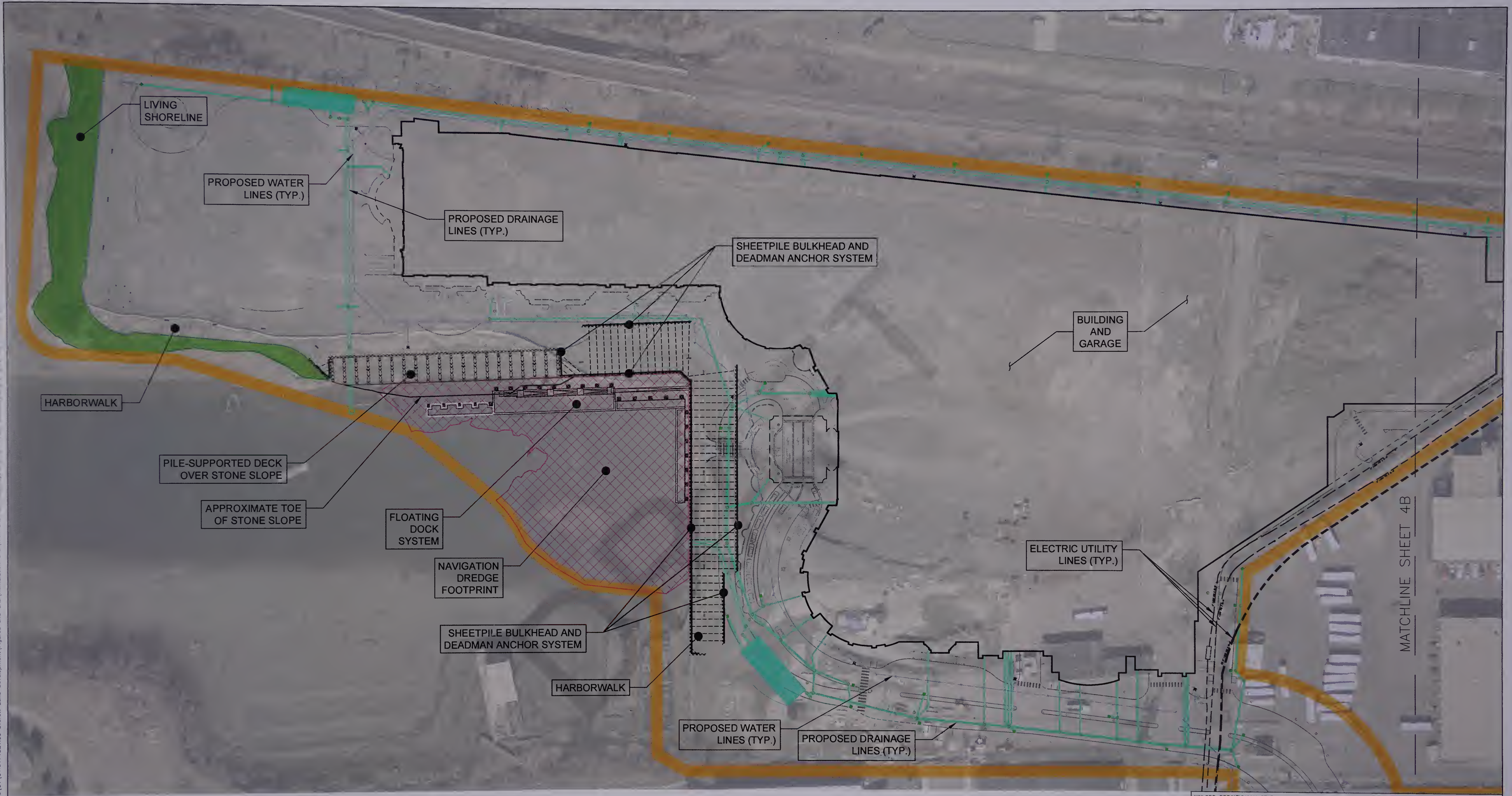
SITE PLAN
FORMER EVERETT STAGING YARD

PREPARED BY
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR
WYNN MA, LLC

PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE 3
DESIGNED BY: VKR	DRAWN BY: LF	SCALE: AS SHOWN	
DATE: FEBRUARY, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	SHEET NO. 3 OF 4

© 2016 – GZA GeoEnvironmental, Inc. GZA-J:\Branch Offices\01\01.0171521.00 Everett Land Development\Figures and CAD\Remdiation CAD\RAM CAD for Vijay\Figure 2-4 - RAM Boundary.dwg [Figure 3] February 10, 2016 - 10:41am joshua zall


LIVING SHORELINE
PROPOSED WATER LINES (TYP.)
PROPOSED DRAINAGE LINES (TYP.)
SHEETPILE BULKHEAD AND DEADMAN ANCHOR SYSTEM
BUILDING AND GARAGE
HARBORWALK
PILE-SUPPORTED DECK OVER STONE SLOPE
APPROXIMATE TOE OF STONE SLOPE
FLOATING DOCK SYSTEM
NAVIGATION DREDGE FOOTPRINT
ELECTRIC UTILITY LINES (TYP.)
MATCHLINE SHEET 4B
SHEETPILE BULKHEAD AND DEADMAN ANCHOR SYSTEM
HARBORWALK
PROPOSED WATER LINES (TYP.)
PROPOSED DRAINAGE LINES (TYP.)
0
25'
50'
100'
150
SCALE IN FEET

NOTES:
1. BASE PLAN FROM FELDMAN PROFESSIONAL LAND SURVEYORS PLAN TITLED "EXISTING CONDITIONS PLAN, BROADWAY (ROUTE 99), EVERETT, MASS." DATED MARCH 20, 2015.
2. AERIAL IMAGE OBTAINED FROM MASSACHUSETTS OFFICE OF GEOGRAPHIC INFORMATION (MASSGIS) USGS COLOR ORTHO IMAGERY DATED 2013/2014.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

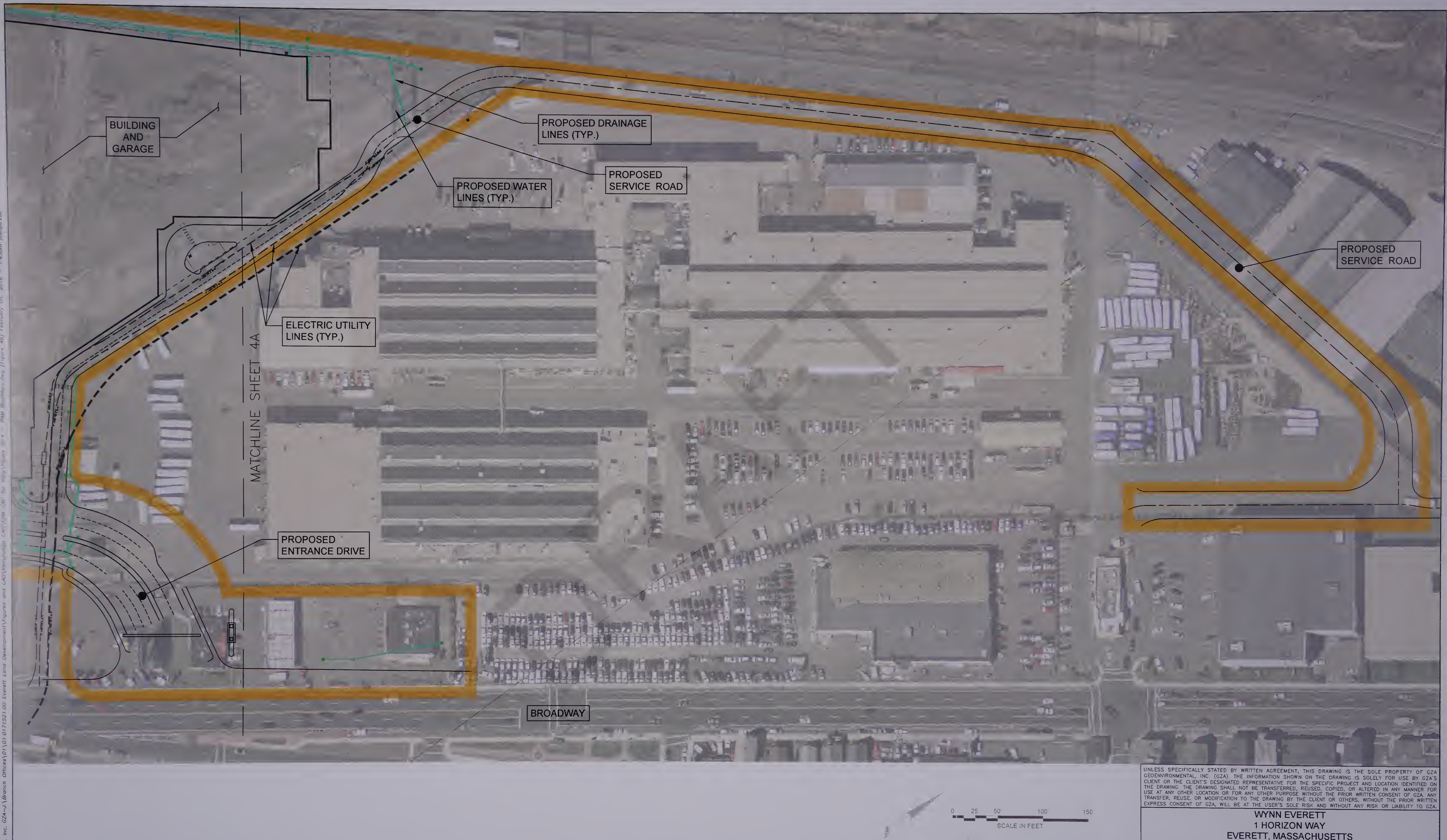
WYNN EVERETT
1 HORIZON WAY
EVERETT, MASSACHUSETTS

CONSTRUCTION PLANS
UPLAND PROPERTY AND WATER-SIDE SITE

PREPARED BY	PREPARED FOR
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com	WYNN MA, LLC

PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE
DESIGNED BY: VKR	DRAWN BY: JJZ	SCALE: AS SHOWN	4a
DATE: FEBRUARY, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	SHEET NO. 4a OF 4

© 2016 – GZA GeoEnvironmental, Inc. GZA-J:\Branch Offices\01\01.0171521.00 Everett Land Development\Figures and CAD\Remediation CAD\RAM CAD [illegible] February 14, 2016 – 1:37pm joshua zall



NOTES:
1. BASE PLAN FROM FELDMAN PROFESSIONAL LAND SURVEYORS PLAN TITLED "EXISTING CONDITIONS PLAN, BROADWAY (ROUTE 99), EVERETT, MASS." DATED MARCH 20, 2015.
2. AERIAL IMAGE OBTAINED FROM MASSACHUSETTS OFFICE OF GEOGRAPHIC INFORMATION (MASSGIS) USGS COLOR ORTHO IMAGERY DATED 2013/2014.

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA GEOENVIRONMENTAL, INC. (GZA). THE INFORMATION SHOWN ON THE DRAWING IS SOLELY FOR USE BY GZA'S CLIENT OR THE CLIENT'S DESIGNATED REPRESENTATIVE FOR THE SPECIFIC PROJECT AND LOCATION IDENTIFIED ON THE DRAWING. THE DRAWING SHALL NOT BE TRANSFERRED, REUSED, COPIED, OR ALTERED IN ANY MANNER FOR USE AT ANY OTHER LOCATION OR FOR ANY OTHER PURPOSE WITHOUT THE PRIOR WRITTEN CONSENT OF GZA. ANY TRANSFER, REUSE, OR MODIFICATION TO THE DRAWING BY THE CLIENT OR OTHERS, WITHOUT THE PRIOR WRITTEN EXPRESS CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OR LIABILITY TO GZA.

WYNN EVERETT
1 HORIZON WAY
EVERETT, MASSACHUSETTS

CONSTRUCTION PLANS
NEIGHBORING PARCELS WITHIN RAM

PREPARED BY
GZA GeoEnvironmental, Inc.
Engineers and Scientists
www.gza.com

PREPARED FOR
WYNN MA, LLC

PROJ MGR: DEL	REVIEWED BY: AJR	CHECKED BY: LF	FIGURE 4b SHEET NO. 4b OF 4
DESIGNED BY: VKR	DRAWN BY: JJZ	SCALE: AS SHOWN	
DATE: FEBRUARY, 2016	PROJECT NO. 01.0171521.15	REVISION NO.	

© 2016 – GZA GeoEnvironmental, Inc. GZA-J:\Branch Offices\01\01.0171521.00 Everett Land Development\Figures and CAD\Remediation CAD\[illegible] CAD for Vizy\Figure 4 – RAM Boundary.dwg [Figure 4b] February 05, 2016 – 7:43am joshua.zall

Proactive by Design

DRAFT

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. Water level readings have been made, as described in this Report, in and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.

DRAFT

SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

CONCEPTUAL SITE MODEL

14. Our opinions were developed, in part, based upon a comparison of site data to conditions anticipated within our Conceptual Site Model (CSM). The CSM is based on available information, and professional judgment. There are rarely sufficient data to develop a unique CSM. Therefore observations over time, and/or space, may vary from those depicted in the CSM provided in this report. In addition, the CSM should be evaluated and refined (as appropriate) whenever significant new information and/or data is obtained.

RISK CHARACTERIZATION

15. Our risk evaluation was performed in accordance with generally accepted practices of appropriate Federal and/or state regulatory agencies, and of other consultants undertaking similar studies at the same time, for similar purposes, and under similar circumstances. The findings of the risk evaluation are dependent on the numerous assumptions and uncertainties inherent in the risk characterization process. Sources of the uncertainty may include Site conditions; Site use; the nature, extent, concentration and distribution of contaminants; and the available toxicity and/or health/risk based regulatory information. Consequently, the findings of the risk characterization are not an absolute

DRAFT

characterization of actual risks; but rather serve to highlight potential incremental risks associated with activities indicated in the Report. Actual risks may be other than indicated in the Report.

DRAFT

GA

Proactive by Design

DRAFT

APPENDIX B

TRANSMITTAL FORMS BWSC106

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE ABATEMENT MEASURE (RAM) TRANSMITTAL FORM

Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

BWSC 106

Release Tracking Number
3 - 13341

A. SITE LOCATION:

1. Site Name/Location Aid: EVERETT STAGING YARD

2. Street Address: 1 HORIZON WAY

3. City/Town: EVERETT 4. Zip Code: 021490000

☑ 5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category.

☐ a. Tier I ☐ b. Tier ID ☑ c. Tier II

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of Initial RAM Plan (if previously submitted): ____________ (mm/dd/yyyy)

☑ 2. Submit an **Initial Release Abatement Measure (RAM) Plan.**

☑ a. Check here if the RAM is being conducted as part of the construction of a permanent structure. If checked, you must specify what type of permanent structure is to be erected in or in the immediate vicinity of the area where the RAM is to be conducted.

b. Specify type of permanent structure: (check all that apply) ☐ i. School ☐ ii. Residential ☑ iii. Commercial

☐ iv. Industrial ☐ v. Other Specify: ____________

☐ 3. Submit a **Modified RAM Plan** of a previously submitted RAM Plan.

☐ 4. Submit a **RAM Status Report.**

☐ 5. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP, concurrent with a RAM Status Report.)

a. Type of Report: (check one) ☐ i. Initial Report ☐ ii. Interim Report ☐ iii. Final Report

b. Frequency of Submittal:

☐ i. A Remedial Monitoring Report(s) submitted every six months, concurrent with a RAM Status Report.

☐ ii. A Remedial Monitoring Report(s) submitted annually, concurrent with a RAM Status Report.

c. Number of Remedial Systems and/or Monitoring Programs: ____________

A separate BWSC106A, RAM Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.

☐ 6. Submit a **RAM Completion Statement.**

☐ 7. Submit a **Revised RAM Completion Statement.**

8. Provide Additional RTNs:

☑ a. Check here if this RAM Submittal covers additional Release Tracking Numbers (RTNs). RTNs that have been previously linked to a Primary Tier Classified RTN do not need to be listed here. This section is intended to allow a RAM to cover more than one unclassified RTN and not show permanent linkage to a Primary Tier Classified RTN.

b. Provide the additional Release Tracking Number(s) covered by this RAM Submittal. 3 - 17760 3 - 1850

☐ 9. Include in the **RAM Plan** or **Modified RAM Plan** a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).

(All sections of this transmittal form must be filled out unless otherwise noted above)

DRAFT

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT RAM:

1. Media Impacted and Receptors Affected: (check all that apply)

☐ a. Paved Surface ☐ b. Basement ☐ c. School
☐ d. Public Water Supply ☐ e. Surface Water ☐ f. Zone 2 ☐ g. Private Well ☐ h. Residence ☑ i. Soil
☑ j. Ground Water ☑ k. Sediments ☐ l. Wetland ☐ m. Storm Drain ☐ n. Indoor Air ☐ o. Air
☐ p. Soil Gas ☐ q. Sub-Slab Soil Gas ☐ r. Critical Exposure Pathway ☐ s. NAPL ☐ t. Unknown
☐ u. Others Specify:

2. Sources of the Release or TOR: (check all that apply)

☐ a. Transformer ☐ b. Fuel Tank ☐ c. Pipe
☐ d. OHM Delivery ☐ e. AST ☐ f. Drums ☐ g. Tanker Truck ☐ h. Hose ☐ i. Line
☐ j. UST Describe: ☐ k. Vehicle ☐ l. Boat/Vessel
☐ m. Unknown ☑ n. Other: HISTORIC FILL AND MANUFACTURING

3. Type of Release or TOR: (check all that apply)

☐ a. Dumping ☐ b. Fire ☐ c. AST Removal ☐ d. Overfill
☐ e. Rupture ☐ f. Vehicle Accident ☐ g. Leak ☐ h. Spill ☐ i. Test Failure ☐ j. TOR Only
☐ k. UST Removal Describe:
☐ l. Unknown ☑ m. Other: HISTORIC FILL AND MANUFACTURING

4. Identify Oils and Hazardous Materials Released: (check all that apply)

☑ a. Oils ☑ b. Chlorinated Solvents
☑ c. Heavy Metals ☑ d. Others Specify: PCBS

DRAFT

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply, for volumes list cumulative amounts)

☐ 1. Assessment and/or Monitoring Only ☐ 2. Temporary Covers or Caps
☐ 3. Deployment of Absorbent or Containment Materials ☐ 4. Temporary Water Supplies
☐ 5. Structure Venting System/HVAC Modification System ☐ 6. Temporary Evacuation or Relocation of Residents
☐ 7. Product or NAPL Recovery ☐ 8. Fencing and Sign Posting
☐ 9. Groundwater Treatment Systems ☐ 10. Soil Vapor Extraction
☐ 11. Remedial Additives ☐ 12. Air Sparging
☐ 13. Active Exposure Pathway Mitigation System ☐ 14. Passive Exposure Pathway Mitigation System
☐ 15. Monitored Natural Attenuation ☐ 16. In-Situ Chemical Oxidation

D. DESCRIPTION OF RESPONSE ACTIONS (cont.): (check all that apply, for volumes list cumulative amounts)

☑ 17. Excavation of Contaminated Soils

☐ a. Re-use, Recycling or Treatment ☐ i. On Site Estimated volume in cubic yards

☐ ii. Off Site Estimated volume in cubic yards

iia. Receiving Facility: Town: State:

iib. Receiving Facility: Town: State:

iii. Describe:

☐ b. Store ☐ i. On Site Estimated volume in cubic yards

☐ ii. Off Site Estimated volume in cubic yards

iia. Receiving Facility: Town: State:

iib. Receiving Facility: Town: State:

☑ c. Landfill ☑ i. Cover Estimated volume in cubic yards 350,000

Receiving Facility: TBD Town: TBD State: MA

☑ ii. Disposal Estimated volume in cubic yards 200,000

Receiving Facility: TBD Town: TBD State: MA

☐ 18. Removal of Drums, Tanks or Containers:

a. Describe Quantity and Amount:

b. Receiving Facility: Town: State:

c. Receiving Facility: Town: State:

☑ 19. Removal of Other Contaminated Media:

a. Specify Type and Volume: DREDGING AND OFF-SITE DISPOSAL OF APPROXIMATELY 17,500 CUBIC YARDS OF SEDIMENT

b. Receiving Facility: TBD Town: TBD State: MA

c. Receiving Facility: Town: State:

☑ 20. Other Response Actions:

Describe: TREATMENT AND DISCHARGE OF GROUNDWATER DURING CONSTRUCTION UNDER AN RGP.

☐ 21. Use of Innovative Technologies:

Describe:

DRAFT

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE ABATEMENT MEASURE (RAM)
TRANSMITTAL FORM
Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

BWSC 106

Release Tracking Number
3 - 13341

E. LSP SIGNATURE AND STAMP :

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that a **Release Abatement Measure Plan** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Release Abatement Measure Status Report** and/or **Remedial Monitoring Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply (ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that a **Release Abatement Measure Completion Statement** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal:

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 8107
2. First Name: LAWRENCE 3. Last Name: FELDMAN
4. Telephone: 781-278-3700 5. Ext.: 6. Email:
7. Signature:
8. Date: (mm/dd/yyyy) 9. LSP Stamp:

DRAFT

F. PERSON UNDERTAKING RAM:

1. Check all that apply: ☐ a. change in contact name ☑ b. change of address ☐ c. change in the person undertaking response actions

2. Name of Organization: WYNN MA LLC
3. Contact First Name: ROBERT
4. Last Name: DESALVIO
5. Street: 101 STATION LANDING, 2ND FLOOR
6. Title: PRESIDENT
7. City/Town: MEDFORD
8. State: MA
9. ZIP Code: 021550000
10. Telephone: 857-770-7801
11. Ext.:
12. Email:

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING RAM:

☐ Check here to change relationship

☑ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
☑ e. Other RP or PRP Specify: ELIGIBLE OWNER/OPERATOR

☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ 4. Any Other Person Undertaking RAM Specify Relationship:

DRAFT

H. REQUIRED ATTACHMENT AND SUBMITTALS:

☐ 1. Check here if any Remediation Waste, generated as a result of this RAM, will be stored, treated, managed, recycled or reused at the site following submission of the RAM Completion Statement. You must submit a Phase IV Remedy Implementation Plan along with the appropriate transmittal form (BWSC108).

☐ 2. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.

☑ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the implementation of a Release Abatement Measure.

☐ 4. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to bwsc.edep@state.ma.us.

☐ 5. If a RAM Compliance Fee is required for this RAM, check here to certify that a RAM Compliance Fee was submitted to DEP, P. O. Box 4062, Boston, MA 02211.

☑ 6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

RELEASE ABATEMENT MEASURE (RAM)
TRANSMITTAL FORM
Pursuant to 310 CMR 40.0444 - 0446 (Subpart D)

BWSC 106

Release Tracking Number
3 - 13341

I. CERTIFICATION OF PERSON UNDERTAKING RAM:

1. I, ______________________, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: ______________________ (Signature) 3. Title: PRESIDENT

4. For: WYNN MA LLC (Name of person or entity recorded in Section F) 5. Date: ______________ (mm dd yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section F.

7. Street: ______________________

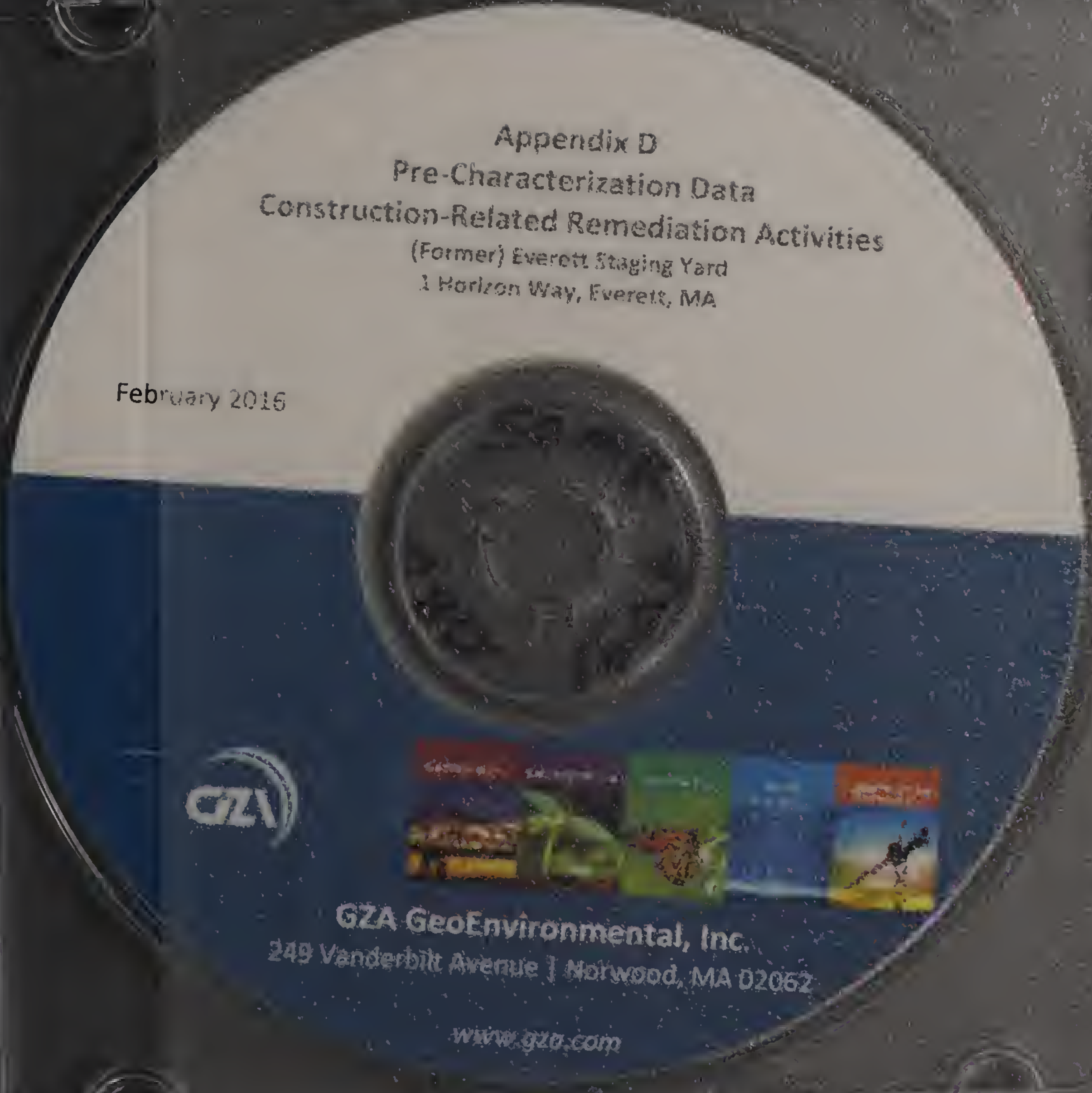
8. City/Town: ______________ 9. State: ______ 10. ZIP Code: ______________

11. Telephone: ______________ 12. Ext.: ______ 13. Email: ______________

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO $10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE

Date Stamp (DEP USE ONLY:)

DRAFT



Appendix D
Pre-Characterization Data
Construction-Related Remediation Activities
(Former) Everett Staging Yard
1 Horizon Way, Everett, MA

February 2016

GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue | Norwood, MA 02062

www.gza.com

1.0 INTRODUCTION

This Remediation Waste Management Plan (RWMP) specifies procedures for the management of soil, groundwater, sediment and debris encountered during Release Abatement Measure (RAM) activities at the following properties:

- Former Everett Staging Yard, 1 Horizon Way, Everett, MA, MassDEP Release Tracking Number (RTN) 3 –13341. As described in the RAM Plan, this Disposal Site includes the following sub-areas:
    - Upland Property: the upland portion of the former Everett Staging Yard Disposal Site.
    - Water-side Site: The water-side portion of the former Everett Staging Yard Disposal Site, where contaminants released from the Upland Property have come to be located in sediment in the Mystic River.
- 20 Broadway, Everett, MA
- 38-50 Broadway, Everett, MA, MassDEP RTN 3-17760, RTN 3-18291, and RTN 3-27571
- Parcel 1 at 80 Broadway, Everett, MA MassDEP RTN 3-23351
- Parcels 2 and 3 at 80 Broadway, Everett, MA
- 3 Charlton Street, Everett, MA, MassDEP RTN 3-1850, RTN 3-19103, RTN 3-24168, and RTN 3-24699[1].

The RWMP applies to the excavation/pumping, handling, transporting, storing, testing, and backfilling/re-injecting of soil and groundwater at these properties. It also applies to the management of wet shoreline soils and sediment generated during RAM activities at the Upland Property and Water-Side Site, and to the handling of debris encountered during both land-side and water-side activities.

1.1 ACTIVITY AND USE LIMITATIONS AT CERTAIN PARCELS WITHIN RAM AREA

Implementation of a Soil Management Plan is required by the terms of the Activity and Use Limitations filed for RTN 3-17760 at 38 Broadway and RTN 3-1850 filed for 3 Charlton Street. The sections of this RWMP pertaining to soil management meet this requirement, and will be followed during RAM activities at the two properties.

2.0 SOIL MANAGEMENT

2.1 RE-LOCATION OF SOILS BETWEEN PROPERTIES

Soils generated during the RAM may be re-located from one property within the RAM area to another property owned by Wynn MA within the RAM area for temporary storage under the provisions of the MCP Section 310 CMR 40.0034(4). In such cases, the soil will be segregated by property to facilitate tracking and disposal documentation.

---

[1] 3 Charlton Street is referred to as 9 Charlton Street in MassDEP's Sites Database and associated filings.

2.2 SOIL SEGREGATION

Excavated soil will be segregated based on the findings of a pre-characterization program conducted in 2014, and 2015 and summarized in the RAM Plan; on additional pre-characterization conducted prior to RAM implementation; and on field observations and sampling during construction. Specifically, it is anticipated that soil will be segregated into the following categories:

- Uncontaminated Soils: These soils will include undisturbed, original inorganic granular materials, natural organic soils (such as peat and organic silt), and natural silty clays and clays that contain contaminant levels below minimum detection limits or below background levels. Uncontaminated soils are anticipated to represent less than 5% of the total volume of material generated during this RAM. Of these, the granular soils may be re-used on Site; the uncontaminated organic soils and clays are anticipated to be structurally unsuitable for re-use and will be transported off-Site to other locations with similar OHM concentrations or to an unlined landfill. Written records will be maintained to track the ultimate destination of this material, which will not be disposed of or re-used in residential, school or recreational areas.

- MCP-Restricted Soil: MCP-Restricted Soil consists of soil, fill and dredged material with OHM concentrations above background levels but below applicable reportable concentrations (RCs) presented in Section 310 CMR 40.1600 of the MCP. It is anticipated that this category of material will represent approximately 5% of the total volume of soil generated during the RAM. This material may be used as fill within the Commonwealth of Massachusetts in a restricted manner as described in MCP Section 310 CMR 40.0032(3) and BWSC Policy No. WSC-13-500. The key requirements of 310 CMR 40.0032(3) include:

    - Soils cannot be disposed of or reused at locations where OHM concentrations would exceed an applicable RC; and

    - Soils cannot be disposed of or reused at receiving sites where existing concentrations of OHM are significantly lower than those present in the soil slated for disposal.

      MCP-Restricted Soil generated during this project may be re-used on Site, transported off Site for re-use in accordance with the requirements described above, or re-used as daily cover at lined or unlined landfills. Written records will be maintained to track the ultimate destination of this material, which will not be disposed of or re-used in residential, school or recreational areas.

- MCP-Regulated Soil: MCP-Regulated Soil consists of material with OHM concentrations equal to or above the applicable RCs; this soil can be reused or disposed of at a lined landfill within the Commonwealth of Massachusetts (in accordance with MassDEP Policy No. 97 001), at an unlined landfill within the Commonwealth that is approved by MassDEP for accepting such material, or at a similar out-of-state facility. These materials may also be recycled off Site at a MassDEP-approved recycling facility possessing a Class A recycling permit, subject to acceptance by the facility and compliance with MassDEP Policy No. WSC-94-400. Included in this category are soils exhibiting the characteristics of a hazardous waste that can be treated on Site to eliminate the toxicity characteristic prior to off-Site disposal and otherwise meet the in-state facility's requirements. Two options for on-Site treatment are being considered: (i) excavation followed by stabilization of the stockpiled material and (ii) stabilization in place. Post-stabilization samples will be collected in accordance with receiving facility protocols to confirm that the treated soil is suitable for shipment to a lined landfill.

  MCP-Regulated Soil is estimated to represent approximately 60% of the total soil volume that will be generated during the RAM, and has been further sub-categorized based on the final disposal location as follows:

- Type A: Soil re-used as cover at an in-state unlined landfill.
- Type B-1: Soil re-used as cover at an in-state lined landfill without the need for on-Site treatment to eliminate the toxicity characteristic (e.g., for arsenic or lead).
- Type B-2: Soils re-used as cover at an in-state lined landfill after successful on-Site treatment to eliminate the toxicity characteristic (e.g., for arsenic or lead).
- Type C: Soil recycled at an in-state batching facility.

Types A and B-1 may also be reused on Site below slab and pavement base courses or below the "clean cover" in landscaped areas provided they are structurally suitable for re-use in these areas. If transported off the Site, these soils will be managed in accordance with the Bill of Lading (BOL) procedures specified in the MCP at 310 CMR 40.0030. The forms will be prepared and stamped by GZA's Licensed Site Professional, and Wynn MA will be designated as the soil generator. Copies of the endorsed tracking/receipt forms issued by the licensed disposal facility will be included in the RAM Completion Report.

- Hazardous Material: Hazardous Material is defined as material that contains a sufficient concentration of OHM that it cannot be reused/recycled in an in-state landfill or in-state recycling facility because it exceeds the Allowable Contaminant Levels for Reuse at Lined Landfills (MassDEP Policy No. COMM-97-001) and Massachusetts Soil Recycling Facility Summary Levels (MassDEP Policy No. WSC 94 400). Included in this category are soils exhibiting the characteristics of a hazardous waste that can be treated on Site to eliminate the toxicity characteristic prior to off-Site disposal. For this project it is estimated that approximately 30% of the soil will be disposed of out-of-State as Hazardous Material, under two sub-categories depending on the final disposal location:
    - Type A: Soil recycled/disposed of out-of-state without the need for on-Site treatment to eliminate the toxicity characteristic (e.g., for arsenic or lead). This material will be shipped off-Site under manifest.
    - Type B: Soil recycled/disposed out-of-state after successful on-Site treatment to eliminate the toxicity characteristic (e.g., for arsenic or lead). This material will be transported off-Site under a BOL.
- PCB-Impacted Material: Material in this category contains PCBs greater than or equal to 50 parts per million by volume, and must be disposed of under manifest at an approved TSCA PCB disposal facility following the requirements of 40 CFR Part 761.61. This material is anticipated to be less than 1% of the total volume of soil generated by the project. Note that historical information indicates that the source of the PCBs at the Site was from a pre-1978 release.
- Hazardous Waste: Material in this category will meet one or more of the criteria for a characteristic Hazardous Waste as defined in 40 CFR 261. This category includes MCP-Regulated Soil and Hazardous Material where on-Site treatment fails to eliminate the toxicity characteristic. Excavated materials classified as Hazardous Waste will be disposed of at an out-of-state permitted facility which is operated in full compliance with 40 CFR 260-265 and 310 CMR 30.00, or the equivalent regulations of other states.

Although most of the soil from the former Everett Staging Yard Site has been pre-characterized to facilitate off-Site transportation and disposal, some limited field sampling and laboratory analysis will be necessary during RAM implementation. Areas where post-excavation soil characterization is anticipated include limited areas of the former Everett Staging Yard Site that have not been characterized to date; areas of the former Everett Staging Yard Site where sampling is necessary to confirm that treatment has sufficiently reduced the leachability of metals to below receiving facility criteria; and those portions of the properties at 38 Broadway and 3 Charlton Street where soil will be generated during the construction of driveways and utility corridors. Soil from these areas may be temporarily re-located within the boundaries of the RAM area, and will be segregated, stockpiled, and covered in accordance with this RWMP pending receipt of laboratory analytical results and re-use or disposal.

At locations where there are currently no MCP reporting requirements (i.e., former MBTA parcels 1, 2, and 3, and the property at 20 Broadway), a preliminary determination regarding the disposition of the soil generated during construction will be made based on visual observation and field screening data. If these field methods do not indicate evidence of OHM impact, the soil may be re-used at the originating property as fill beneath pavement. Soil generated during construction that exhibits staining, odors, or other signs of contamination, and excess soil generated during RAM activities, will be characterized in accordance with disposal facility acceptance criteria and will be transported off the Site under BOL or manifest as necessary. Soil from any given property will not be re-used at other properties within the RAM boundary unless laboratory analytical data confirm that the material meets the criteria for MCP-restricted soil as described earlier in this document.

2.3 TEMPORARY STOCKPILING/STORAGE OF SOIL

It is anticipated that most of the soil generated during the RAM will be live-loaded for immediate off-Site disposal. However, where temporary on-Site storage of materials is required, soil stockpiling cells will be constructed to contain soil pending additional characterization, treatment, and/or re-use or off-Site disposal. Alternatively, smaller volumes of soil may be temporarily stored within the RAM boundaries in covered roll-off containers pending off-Site transportation and disposal or on-Site re-use.

Stockpile areas will be graded such that storm water runoff is diverted from stockpiled soils; and berms (i.e., hay bales, silt fencing, gravel) will be placed around the perimeter of the area to prevent contact of runoff with contaminated soils. The temporary soil storage cells will be designed to hold wet materials and capture water that may drain from these materials. The cells will be constructed using hay bales or concrete Jersey barrier sections to form low walls on three sides of the cell; plastic sheeting will be used to line the ground within the cell, and will be draped over the low walls to form a basin for storage of the soils. The cells will be constructed with gentle slopes to allow any water that drains from the stockpiled materials to collect at the base of one of the cell walls (or within a sub-grade sump). The water generated within the storage cells will be managed as described in the Water Management section of this RWMP. In addition to gravity dewatering, additives such as Portland Cement or Calciment may be added to saturated soils within the cells prior to off-Site transportation so that the material meets regulatory transportation requirements and accepting facility criteria.

Stockpiled materials will be handled in accordance with the Best Management Practices (BMPs) described below:

1. Polyethylene sheeting will be used as a baseliner within the soil stockpile cells.
2. No material will be removed from the soil cells without suitable segregation, stockpiling, classification, and completion of a Materials Tracking Record.
3. Excavation, material handling, and stockpiling will be performed in a manner which prevents the mixing of soils that meet different segregation criteria, including mixing of large diameter debris segregated from those soil materials and mixing of soil between properties.
4. The transfer of materials from the excavations to the soil storage cells will be conducted in such a manner as to limit the spread of contaminated or potentially contaminated materials with the RAM boundaries or across cells.
5. The stockpile areas will be blocked off to minimize worker and passerby contact with stockpiled soil.
6. No stockpile will exceed 500 cubic yards in volume. .

7. At the end of each work day the stockpiled materials within the cells will be covered with plastic sheeting overlapped and weighted to prevent re-wetting should a rain event occur, and to prevent windblown dust if the surficial material has become dry.

8. Any breach in the integrity of the stockpile liner or cover system will be promptly repaired.

9. Soil that erodes from stockpiles will be collected and the area screened at a frequency of 1 sample per 2,500 square feet to confirm that the residual levels of contaminants are below the applicable cleanup standards for the area. Soil that does not meet an applicable cleanup level will be excavated and relocated to an MCP-restricted, MCP-regulated, or hazardous material stockpile as appropriate.

2.4 ADDITIONAL MATERIALS

In addition to the soil discussed above, it is anticipated that the excavated material generated at the Upland Property and neighboring properties will contain asphalt, brick, concrete and other large diameter (typically greater than 18 inches in diameter) debris. Such large diameter materials, if encountered, will be segregated from the excavated soils, and will be brush-cleaned and stockpiled pending transportation to an appropriate recycling or disposal facility. Soils that have substantial amounts of small diameter (typically less than 18 inches in diameter) material will be segregated. Debris encountered at the Water-Side Site will be managed as described in the Sediment Management section of this RWMP.

Further, excavation in the southern area of the former Everett Staging Yard Site may encounter previously remediated soils that were treated by in situ stabilization/solidification in accordance with an August 2015 RAM Plan for the Site. This material will be stockpiled separately pending characterization and disposal at an appropriate off-Site facility.

2.5 DUST MANAGEMENT

To minimize fugitive dust, dust control measures will be implemented during all Site activities likely to generate dust. Such activities are anticipated to include soil excavation, on-Site soil movement, screening, stabilization, and loading. During daily operations, dust abatement measures (i.e., water spraying or misting) will be employed to minimize the spread of dust contaminants, and to reduce the potential for exposure to Site workers and the adjacent community.

3.0 WATER MANAGEMENT

During construction, dewatering will be conducted at the former Everett Staging Yard Site to remove groundwater from within excavations and to provide a substantial dry and stable subgrade for subsequent operations. Based on a preliminary assessment provided by others, approximately 40 wells will be installed at a 100-foot-spacing to depths of between 50 and 120 feet below ground surface. Groundwater will be removed via downhole submersible pumps through an on-Site treatment system designed to provide continuous treatment to meet NPDES Remediation General Permit (RGP) discharge criteria. Based on preliminary design calculations, the treatment train will likely include one or more influent settling tanks with a chemical injection pump for addition of oxidant, followed by bag filters, granular activated carbon, and zeolite tanks for metals removal. The treated effluent will likely be discharged to adjacent surface waters in accordance with an NPDES permit. Treated groundwater may also be discharged to the subsurface along the western and/or northern boundary of the property.

Short-term dewatering may also be conducted at the neighboring parcels within the RAM boundary, or at localized areas within the former Everett Staging Yard Site, during construction activities. This water will either be discharged at a location immediately upgradient of the point of extraction and in accordance with 310 CMR 40.0045, be containerized for off-Site disposal, or pumped to the on-Site treatment system for treatment and discharge. Alternatively, a separate NPDES permit may be obtained for such discharge.

Additional, smaller quantities of water will be generated at all properties within the RAM boundary by the decontamination and surface cleaning of equipment, debris, and vehicles. This water will either be containerized for off-Site disposal or pumped to the on-Site treatment system for treatment and discharge.

Any dewatering fluids that do not meet the discharge criteria following treatment will be containerized for off-Site transport and disposal under an appropriate waste manifest.

Water generated during dredging operations at the Water-Side Site will be managed as described in the Sediment Management section of this RWMP.

4.0 SEDIMENT MANAGEMENT

4.1 SEDIMENT PROCESSING AND DEWATERING

This section describes the management of materials generated during the dredging of the navigational channel at the Water-Side Site, as well as saturated soils that may be excavated from the shoreline between the Upland Property and the Water-Side Site during the installation of shoreline enhancement structures and docking facilities. These materials are collectively designated as sediment for the purposes of this RWMP, and will generally be excavated using water-based equipment located in the Mystic River embayment. As required by the terms of the Water Quality Certification issued by MassDEP for the project, BMPs, including a silt curtain, will be deployed around the in-water work areas, and turbidity monitoring will be conducted during the work.

Based on upland space constraints and the lack of suitable off-loading facilities from the Water-Side Site to the Upland Property, GZA anticipates that the sediment generated during the RAM will be placed into a scow or a hopper barge fitted with sumps to facilitate dewatering. The dewatered sediment will either be stabilized on the scow within the project boundaries, or transported under a BOL to a separate off-Site facility for such processing. In compliance with the Water Quality Certification, the MassDEP Wetlands Division will be notified in writing of the name of the off-Site facility and its location, and will be provided with copies of applicable permits issued to the facility by agencies such as the local Conservation Commission.

At either location, the dewatering effluent will be treated as necessary to meet surface water quality standards prior to discharge to the receiving waters. If dewatering is conducted within the project boundaries, the free water from the scow will be pumped through a filter fabric or screened hose into a settling tank or equivalent holding container, and will then be discharged within the turbidity barrier in accordance with the terms of the Water Quality Certification. Turbidity monitoring and periodic Total Suspended Solids (TSS) testing will be conducted to confirm compliance with the terms of the Water Quality Certification.

During the dewatering process, the sediment may be mixed with an additive such as Portland cement for drying, stabilization and odor control. Laboratory analyses will be conducted, as necessary, to confirm compliance with the acceptance criteria of the final receiving facility, which is likely to be an out-of-State landfill. Should street transport be involved (e.g., from the off-Site dewatering facility to the landfill), Paint Filter testing will also be conducted to confirm that free liquids have been sufficiently reduced during the dewatering process.

Confirmation that the dewatered material is acceptable to the receiving facility will be obtained from the facility operator and provided to the MassDEP Wetlands Program. The sediment will then be transported under BOL or manifest, as appropriate, to the disposal facility. Copies of the disposal documentation will be provided in the RAM Completion Report.

4.2 DEBRIS FROM WATER-SIDE SITE

The Water Quality Certification for the project has established the following specific provisions for the management of debris removed during RAM activities along the shoreline and in the navigational channel.

4.2.1 Management of Water-Side Site Wood Waste

Prior to dredging, between 50 and 60 deteriorated pilings and a sunken timber barge will need to be removed from the waterway. Timber bulkhead removal will require removal of an additional 100 to 200 batter piles within the dredge footprint. As required by the Water Quality Certification, BMPs will be implemented to minimize potential effects on the aquatic environment from these removal operations. Specifically, the pilings will be extracted and removed according to "Best Management Practices for Pile Removal & Disposal" (EPA 2007), and in accordance with a Pile Pulling Management Plan to be approved by the MassDEP Wetlands Program prior to the initiation of work. Additional information about the pile removal procedures is provided in the RAM Plan; this section focuses on the post-removal management and disposal.

Pulled piles will be moved directly from the water to a sediment containment area or hopper or a containment barge. The extracted piles and debris will be placed in a lined area, with appropriate controls to prevent runoff from leaving the temporary stockpile area and entering surface water or groundwater. As required by the Water Quality Certification, piles that have been treated with preservatives will be segregated from untreated wooden piles.

Untreated wooden piles will be cleaned of sediment, and the associated sediment will be contained during handling and transport to prevent re-introduction to the water. This material will be added to the sediment in the scows for off-Site transportation and disposal, and the piles will be disposed of as wood waste. Chemically treated piles will not be cleaned of sediment, either in or over the water; instead, the treated piles and associated sediment and debris will be removed and disposed of at an appropriately licensed facility.

4.2.2 Management of Additional Water-Side Site Debris

Other debris that will be encountered during the shoreline and in-water activities includes timber, brick, asphalt, concrete block, and concrete bulkheads and retaining walls. As described in the RAM Plan, concrete structures will be removed in their entirety to the extent practicable, but large structures may require limited demolition. Debris associated with the demolition, as well as floating surface debris, will be collected from the waterway. The various types of debris will be segregated based on their composition, and will be transported to suitable off-Site facilities for disposal.

5.0 TRANSPORTATION OF REMEDIATION WASTE

Remediation waste will be transported off the Site by various methods, including truck, barge/scow, and/or rail. All remediation waste will be transported under the oversight of a Licensed Site Professional (LSP), and will be accompanied by either a BOL or a hazardous waste manifest.

5.1 SOIL TRANSPORTATION

Soil and associated debris will be transported to the appropriate off-Site receiving location either via rail or road. Material that is to be transported by road will be loaded into tractor trailer vehicles using excavators and front end loaders. Filled trailer weights will not exceed the legal weight limit for transport on roads and highways.

Should soil be moved by rail, a new spur and loading area will be required. Soil transported via rail will be top-loaded into low-sided gondolas using excavators and front end loaders. Gondolas will be lined as required by the rail line operator and/or receiving facility. If the railcar is not completely loaded before the end of a work day, a temporary cover will be used during overnight storage. Gondolas leaving the RAM Project Area will be covered as may be required by the receiving facility, rail line operator or applicable local, state and federal guidelines. Upon completion of soil removal activities, the rail spur will be removed.

Soil may also be transported to an appropriate off-Site facility by barge, in which case it will be handled in accordance with the sediment transportation procedures described below.

As described above, potential destinations for soil from the RAM Project Area include sites with similar OHM concentrations (for uncontaminated soils), except residential, school or recreational areas; unlined in-state landfills; lined in-state landfills; out-of-state landfills; state recycling facilities possessing a Class A recycling permit; and TSCA approved facilities. Prior to departure, the LSP or his designated representative will confirm that the operator of each transport vehicle is equipped with the appropriate soil transport and disposal tracking paperwork.

5.2 WATER TRANSPORTATION

Most of the water that is generated during upland activities will be treated and discharged under an NPDES permit or re-infiltrated as described earlier in this document, and most of the water generated during in-water activities will be decanted and either discharged within turbidity barriers or discharged at an off-Site processing facility in accordance with the Water Quality Certification. However, some water generated during decontamination or localized excavation may be containerized, sampled, and shipped off-Site via road for disposal at an off-Site facility. The transportation and disposal of the water will be tracked under a BOL or manifest, as appropriate.

5.3 SEDIMENT TRANSPORTATION

As described in this RWMP, sediment will be loaded into scows for transport to either an interim dewatering facility or, if dewatering is conducted within the Water-Side Site, directly to an off-Site disposal facility. The approved dredge inspector is not required to accompany the dredged material while in transit; however, a copy of the BOL will be provided to MassDEP Wetlands in a Final Dredge Report to record the transportation and final destination of dredged material.

BMPs will be implemented during transportation of the dredged material to the licensed receiving facility. Some dredged materials transported away from the Site by barge may subsequently be transported by road from the off-Site processing facility to the final receiving facility. In such cases, the dredged material will have no free liquid as that criterion is determined by the Paint Filter Test or other suitably analogous methodology, and a tarpaulin or other means will be used to cover the dredged material during transport.

In-water debris may either be moved to the Upland Property, where it will be segregated from the soil and transported off-Site via road or rail, or transported via barge. The appropriate tracking paperwork will accompany the transport of such material to its final destination.

5.4 VEHICLE DECONTAMINATION

Soil, sediment, and debris disposal transport vehicles, after being loaded and checked for security, will be decontaminated as described below prior to leaving the RAM Project Area.

One or more Vehicle Decontamination Pads (VDPs) will be constructed on Site in proximity to the truck exit(s). Each VDP will consist of a HDPE liner bedded on sand gently sloped to one corner, with crushed stone placed across the entire surface. The extended sides of the liner will be positioned upwards, supported by parallel rows of hay bales, to facilitate the containment and collection of wash water at the VDP. Clean water for decontamination activities will be supplied by an approved municipal hydrant tap. Water from the VDP will be gravity directed to a holding sump that will be positioned in the ground at one corner of the VDP.

Prior to departing the RAM Project Area, construction vehicles, including trucks used for transportation of soils, will be shovel scraped and broomed/brushed free of accessible soil and Site material. Particular emphasis will be placed on ground contact portions of vehicles such as buckets, wheels, tracks and booms. Vehicles will then be positioned on the VDP and decontaminated using a high pressure water sprayer to remove visible soil and Site material. Longer vehicles will be decontaminated in segments as they are advanced through the VDP. During periods of non-use the VDP will be covered with a polyethylene tarp to minimize the accumulation of precipitation in the sump.

Water collected in the VDP sump will either be pumped to either the temporary on-Site treatment system used for construction dewatering, or containerized for transport by a licensed waste hauler for proper off-Site disposal. Following the completion of Site earthwork activities, the VDP liner and crushed stone, along with any trapped sediment, will be tested according to the RWMP protocol, and then disposed of at an approved off-Site facility or, if possible, reused on Site.

Prior to departing the RAM Project Area, train gondola exteriors will be inspected for the presence of adhered soil or other debris. If observed, such material will be shovel scraped and broomed/brushed free before the gondola is allowed to leave the RAM Project Area. Should additional cleaning be warranted, soil or other debris will be removed using a high pressure water sprayer, and wash water will either be pumped to either the temporary on-Site treatment system used for construction dewatering, or containerized for transport by a licensed waste hauler for proper off-Site disposal.

GZA

Proactive by Design

DRAFT

APPENDIX F

DERIVATION OF SITE-SPECIFIC PERIMETER DUST ACTION LEVELS

TABLE F-1
SUMMARY OF TOTAL HAZARD INDICES AND RISK ESTIMATES
1 Horizon Way
Everett, Massachusetts

Receptor	Exposure Media/Route	Non-Cancer Hazard		Excess Lifetime Cancer Risk	
		SubChronic HI	Driver	Estimate	Driver
RECEPTOR: Commercial/Industrial Workers	Exposure to Soil-Derived Dust via Gastrointestinal Tract	0.08	Lead	6E-08	Arsenic
	Inhalation of Soil-derived Fugitive Dust	1	Arsenic	1E-06	Chromium (total)
	Total for RECEPTOR: Commercial/Industrial Workers:	1		1E-06	
	MCP Risk Limits:	1		1E-05	
	Exceed MCP Risk Limits?	NO		NO	

Receptor	Exposure Media/Route	Non-Cancer Hazard						Excess Lifetime Cancer Risk	
		Young Child (ages 1<2 years)		Child (ages 7<8 years)		Adult (ages 65 years)			
		SubChronic HI	Driver	SubChronic HI	Driver	SubChronic HI	Driver	Estimate	Driver
RECEPTOR: Residents	Exposure to Soil-Derived Dust via Gastrointestinal Tract	0.01	Lead	0.06	Lead	0.1	Lead	8E-08	Arsenic
	Inhalation of Soil-derived Fugitive Dust	0.1	Arsenic	0.4	Arsenic	1	Chromium (total)	8E-07	Chromium (total)
	Total for RECEPTOR: Residents:	0.1		0.5		1		8E-07	
	MCP Risk Limits:	1		1		1		1E-05	
	Exceed MCP Risk Limits?	NO		NO		NO		NO	

Note:
Based on the PM10 of 1.4 mg/m^3.

Abbreviations:
MCP = Massachusetts Contingency Plan; HI = Hazard Index.

DRAFT

TABLE F-2
SUMMARY OF EXPOSURE POINT CONCENTRATIONS
1 Horizon Way
Everett, Massachusetts

COC	EPC1 Arithmetic Mean Concentration in Soil[a] (mg/kg)	EPC2 Estimated Concentration in Fugitive Dust[b] (mg/m³)
1,1,1-Trichloroethane	0.0036	5.07E-09
1,1-Dichloroethane	0.0036	5.07E-09
1,2,3-Trichlorobenzene	0.031	4.35E-08
1,2,4-Trichlorobenzene	0.33	4.59E-07
1,2-Dichlorobenzene	0.0095	1.34E-08
1,2-Dichloroethane	0.011	1.57E-08
1,3-Dichlorobenzene	0.0096	1.34E-08
1,4-Dichlorobenzene	0.011	1.49E-08
2-Butanone	0.030	4.19E-08
2-Chlorotoluene	0.0032	4.53E-09
Acetone	0.090	1.25E-07
Benzene	0.0092	1.29E-08
Carbon Disulfide	0.026	3.59E-08
Chlorobenzene	0.0032	4.53E-09
Chloroform	0.0064	8.95E-09
cis-1,2-Dichloroethene	0.0042	5.93E-09
Diethylether	0.0034	4.81E-09
Ethylbenzene	0.018	2.47E-08
Methylene Chloride	0.017	2.32E-08
Naphthalene	0.87	1.22E-06
Tetrachloroethene	0.0032	4.54E-09
Toluene	0.016	2.18E-08
Trichloroethene	0.011	1.61E-08
Vinyl Chloride	0.0059	8.23E-09
Xylene (Total)	0.038	5.28E-08
Styrene	0.0043	6.04E-09
1,2-Dichloropropane	0.0033	4.69E-09
1,2,3-Trichloropropane	0.0032	4.54E-09
1,4-Dioxane	0.12	1.63E-07
2,4-Dimethylphenol	0.67	9.33E-07
1-Methylnaphthalene	2.6	3.70E-06
2-Methylnaphthalene	0.96	1.35E-06
2-Methylphenol	0.66	9.27E-07
4-Methylphenol	1.5	2.15E-06
Acenaphthene	1.2	1.67E-06
Acenaphthylene	0.78	1.10E-06
Anthracene	1.9	2.68E-06
Benzo(a)Anthracene	2.6	3.60E-06
Benzo(a)Pyrene	1.9	2.63E-06
Benzo(e)Pyrene	2.8	3.88E-06
Benzo(b)Fluoranthene	2.3	3.22E-06
Benzo(g,h,i)Perylene	1.1	1.48E-06
Benzo(k)Fluoranthene	1.5	2.12E-06
Bis(2-Ethylhexyl)phthalate	717	1.00E-03
Butylbenzylphthalate	0.68	9.54E-07
Chrysene	2.2	3.06E-06
Dibenzo(a,h)anthracene	0.54	7.61E-07
Dibenzofuran	1.0	1.43E-06
Di-n-butylphthalate	0.66	9.29E-07
Fluoranthene	5.4	7.56E-06
Fluorene	1.3	1.85E-06
Indeno(1,2,3-cd)Pyrene	1.1	1.53E-06
Phenanthrene	5.3	7.41E-06
Phenol	0.99	1.39E-06
Pyrene	4.2	5.92E-06
bis(2-Chloroethoxy)methane	0.67	9.39E-07
Pentachlorophenol	2.7	3.79E-06
3,3-Dichlorobenzidine	1.3	1.84E-06
C11-C22 Aromatic Fraction	454	6.36E-04
C19-C36 Aliphatic Fraction	665	9.31E-04
C5-C8 Aliphatic Fraction	11	1.54E-05
C9-C10 Aromatic Fraction	26	3.60E-05
C9-C18 Aliphatic Fraction	68	9.46E-05
4,4'-DDD	0.0045	6.34E-09
4,4'-DDE	0.0052	7.30E-09
4,4'-DDT	0.016	2.26E-08
alpha-BHC	0.0045	6.27E-09
beta-BHC	0.0045	6.28E-09
Dieldrin	0.013	1.79E-08
Endrin Ketone	0.0046	6.43E-09
gamma-BHC	0.0045	6.27E-09
Heptachlor Epoxide	0.0065	9.13E-09
Hexachlorobenzene	0.0047	6.61E-09
Methoxychlor	0.0064	8.92E-09
2,4-D	0.14	1.94E-07
2,4,5-T	0.058	8.18E-08
Dicamba	0.068	9.59E-08
Aroclor - 1242	0.24	3.33E-07
Aroclor - 1248	0.23	3.20E-07
Aroclor - 1254	0.57	7.96E-07
Aroclor - 1260	3.3	4.63E-06
Aroclor - 1262	0.22	3.09E-07
Aroclor - 1268	0.21	2.98E-07
Antimony	5.0	6.95E-06
Arsenic	53	7.45E-05
Barium	74	1.04E-04
Beryllium	0.24	3.38E-07
Cadmium	1.8	2.54E-06
Chromium (total)	27	3.80E-05
Copper	1010	1.41E-03
Cyanide	1.3	1.82E-06
Iron	81800	1.15E-01
Lead	773	1.08E-03
Mercury	2.7	3.82E-06
Nickel	23	3.20E-05
Selenium	9.8	1.37E-05
Silver	1.7	2.32E-06
Thallium	3.1	4.38E-06
Vanadium	48	6.76E-05
Zinc	249	3.48E-04

Notes:

a. The soil exposure point concentration is based on the arithmetic mean concentration from all soil samples associated with soil being removed during the Release Abatement Measure (RAM).

For copper, iron, and cyanide, the maximum detected concentrations were used as the EPCs due to the relatively small sample size.

b. The soil-borne fugitive dust exposure point concentrations were estimated from the soil exposure point concentration according to the following equation:

$$EPC_{dust} = EPC_{soil} * PM_{10} * C1$$

EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	Calculated	modeled from soil concentrations
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	Calculated	average concentrations used
[1] PM_{10}	Respirable Particle Concentration - Construction Workers	mg/m^3	1.4	Proposed Action Limit
C1	Unit Conversion Factor	kg/mg	1E-06	Constant

Abbreviations:
COC = constituent of concern.

DRAFT

TABLE F-3
COMMERCIAL/INDUSTRIAL OUTDOOR WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

DRAFT

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

Exposure Pathway: Exposure to Dust via Gastrointestinal Tract

$$ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{nc}} \quad \text{Equation 3}$$

$$LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{c}} \quad \text{Equation 4}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{soil\text{-}oral}$	Average Daily Dose	mg/kg-day	Calculated	Equation 3
$LADD_{soil\text{-}oral}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 4
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	TABLE F-2	See Text
IR_{soil}	Soil Ingestion Rate	mg/day	13.4	Calculated in accordance with the MassDEP (2008) Guidance, see Note below.
EF	Exposure Frequency	events/year	209	MassDEP 2014 (Four days per week), prorated to the project period.
ED	Exposure Duration	days/event	1	MassDEP, 1995
EP	Exposure Period	years	0.5	Assumed Project Duratiion.
RAF_{oral}	Relative Absorption Factor	unitless	Constituent-specific	TABLE F-8
C1	conversion factor for units	kg/mg	1E-06	Constant
BW	Body Weight of Receptor	kg	61	MassDEP 2014
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Note:

A. The soil-derived dust ingestion rate (exposure to dust via Gastrointestianl Tract) is calculated as below.

Soil Ingestion Rate (via Gastrointestianl Tract)= 2 x PM10 x VR x ED x C1

C1= 0.00006 units conversion factors (mg/mg × min/hr× m^3/L)

	PM10 (µg/m^3)	VR (L/min) - light exertion, Table C-4 of MassDEP (1995)		Outdoor Duration ED (hours)	Dust Ingestion Rate (dust enters the gastrointestinal tract), mg/day
Commercial/ Industrial Workers	1400	10	low activity	8	13.4

Abbreviation:

MassDEP = Massachusetts Department of Environmental Protection.

TABLE F-3
COMMERCIAL/INDUSTRIAL OUTDOOR WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

EXPOSURE PATHWAY: Inhalation of Soil-borne Fugitive Dust

$$ADE_{dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}} \quad \text{Equation 5}$$

$$LADE_{dust} = \frac{EPC_{dust} * EF * ED * EP * C2 * C3}{AP_{c}} \quad \text{Equation 6}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
ADE_{dust}	Average Daily Exposure	mg/m^3	Calculated	Equation 5
$LADE_{dust}$	Lifetime Average Daily Exposure	$\mu g/m^3$	Calculated	Equation 6
EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	TABLE F-2	modeled from soil concentrations using RP (Note A)
EF	Exposure Frequency	events/year	209	MassDEP 2014 (Four days per week), prorated to the project period.
ED	Exposure Duration	hours/event	8	Typical workday
EP	Exposure Period	years	0.5	Assumed Project Duratiion.
C2	conversion factor for units	days/hours	0.0417	Constant
C3	conversion factor for units	µg/mg	1,000	Constant
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Note:

A. A respirable particle concentration (RP) of 1.4 mg/m^3 was applied to soil EPCs to calculate EPC_{dust}.
See text for equation used to derive EPC_{dust}.

Abbreviation:
MassDEP = Massachusetts Department of Environmental Protection.

DRAFT

TABLE F-4
RESIDENT EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

Exposure Pathway: Exposure to Dust via Gastrointestinal Tract

$$ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}} \qquad \text{Equation 3}$$

$$LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}c} * C1}{BW * AP_{c}} \qquad \text{Equation 4}$$

			Receptor Specific Values			
Parameter	Definition	Units	Young Child (ages 1<2 years)	Child (ages 7<8 years)	Adult (ages 65 years)	Rationale/Reference
$ADD_{soil\text{-}oral}$	Average Daily Dose	mg/kg-day	Equation 3	Equation 3	NA	Calculated
$LADD_{soil\text{-}oral}$	Lifetime Average Daily Dose	mg/kg-day	NA	NA	Equation 4	Calculated
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	TABLE F-2	TABLE F-2	TABLE F-2	See Text
IR_{soil}	Soil Ingestion Rate	mg/day	0.30	2.9	16.7	Calculated in accordance with the MassDEP (2008) Guidance, see Note below.
EF	Exposure Frequency	events/year	261	261	261	MassDEP, 1995; 5 days/week during construction. The exposure frequency was prorated for the 26-week exposure period.
ED	Exposure Duration	days/event	1	1	1	MassDEP, 1995
EP	Exposure Period	years	0.5	0.5	0.5	Assumed Project Duration
RAF_{oral}	Relative Absorption Factor	unitless	constituent-specific	constituent-specific	constituent-specific	MassDEP, 2014
C1	conversion factor for units	kg/mg	1E-06	1E-06	1E-06	Constant
BW	Body Weight of Receptor	kg	11	24	74	MassDEP, 2014; average for female receptros within the age range. average for female receptros within the age range, USEPA (2011) Exposure Factors Handbook, Table 8-5
AP_{nc}	Averaging Period, non-cancer	days	183	183	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	NA	NA	25,550	equals average lifetime, 70 years * 365 days/year

Note:

Soil Ingestion Rate (via Gastrointestianl Tract)= 2 x PM10 x VR x ED x C1

C1= 0.00006 units conversion factors ($mg/mg \times min/hr \times m^3/L$)

	PM10 ($\mu g/m^3$)	VR (L/min) - light exertion, Table C-4 of MassDEP (1995)		Outdoor Duration ED (hours)	Dust Ingestion Rate (dust enters the gastrointestinal tract), mg/day
Child resident age 1<2 years	1400	3	light exertion	0.6	0.30
Youth resident age 1<8 years	1400	7.77	light exertion	2.2	2.9
Resident ages 65 years	1400	20	light exertion	5.0	16.7

DRAFT

TABLE F-4
RESIDENT EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

Exposure Pathway: Inhalation of Fugitive Dust

$$ADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}} \quad \text{Equation 5}$$

$$LADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2 * C4}{AP_{c}} \quad \text{Equation 6}$$

			Receptor Specific Values			
			Young Child	Child	Adult	
Parameter	Definition	Units	(ages 1<2 years)	(ages 7<8 years)	(ages 65 years)	Rationale/Reference
$ADE_{inh\text{-}dust}$	Average Daily Exposure	mg/m^3	Equation 5	Equation 5	NA	Calculated
$LADE_{inh\text{-}dust}$	Lifetime Average Daily Exposure	$\mu g/m^3$	NA	NA	Equation 6	Calculated
EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	TABLE F-2	TABLE F-2	TABLE F-2	modeled from soil concentrations
EF	Exposure Frequency	events/year	261	261	261	MassDEP, 1995; 5 days/week during construction. The exposure frequency was prorated for the 26-week exposure period.
ED	Exposure Duration	hours/event	0.6	2.2	5.0	USEPA, 2011 (Table 16-1), averge time outdoors.
EP	Exposure Period	years	0.5	0.5	0.5	Assumed Project Duration
C2	conversion factor for units	days/hours	0.0417	0.0417	0.0417	Constant
C4	conversion factor for units	µg/mg	1,000	1,000	1,000	Constant
AP_{nc}	Averaging Period, non-cancer	days	183	183	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	NA	NA	25,550	equals average lifetime, 70 years * 365 days/year

Notes:

A. A respirable particle concentration (RP) of 1.4 mg/m^3 was applied to soil EPCs to calculate EPC_{dust}.
See text for equation used to derive EPC_{dust}.

Abbreviation:

USEPA = United States Environmental Protection Agency.

DRAFT

TABLE F-5
SUMMARY OF DOSE-RESPONSE INFORMATION - NONCARCINOGENIC EFFECTS - ORAL
1 Horizon Way
Everett, Massachusetts

COC	Oral Subchronic Reference Dose (mg/kg-day)		Oral Chronic Reference Dose (mg/kg-day)		Chronic Oral RfD UF X MF	Target Organ/System	Critical Effect	Study Animal	Study Method
1,1,1-Trichloroethane	7	a	2	a	1000 x 1	body weight	reduced body weight	mouse	oral - diet
1,1-Dichloroethane	2	g	0.2	g	3000 x 1	kidney	renal injury	rat	oral
1,2,3-Trichlorobenzene	0.008	g	0.0008	ag		body weight	reduction in body weight gain	rat	oral - diet
1,2,4-Trichlorobenzene	0.09	g	0.01	a	1000 x 1	Reproductive	increased adrenal weights; vacuolization of zona fasciculata in the cortex	rat	oral-drinking water
1,2-Dichlorobenzene	0.9	c	0.09	a	1000 x 1	NA	no observed effects	rat	oral-gavage
1,2-Dichloroethane	0.02	g	0.02	c		kidney	increased kidney weight	rat	oral-drinking water
1,3-Dichlorobenzene	0.9	z	0.09	z					
1,4-Dichlorobenzene	0.9	z	0.09	z					
2-Butanone	0.6	d	0.6	a	1000 x 1	fetus	decreased fetal birth weight	rat	oral-drinking water
2-Chlorotoluene	0.2	b	0.02	a	1000 x 1	Whole Body	Decrease in Body Weight Gain	rat	oral-gavage
Acetone	2.7	c	0.9	a	1000 x 1	liver, kidney	increased liver and kidney weights and nephrotoxicity	rat	oral-gavage
Benzene	0.01	c	0.004	a	300 x 1	blood	decreased lymphocyte count	human	inhalation
Carbon Disulfide	0.1	b	0.1	a	100 x 1	fetus	fetal toxicity/malformations	rabbit	inhalation
Chlorobenzene	0.07	g	0.02	a	1000 x 1	liver	histopathologic changes	dog	oral-capsule
Chloroform	0.01	b	0.01	a	1000 x 1	liver	fatty cyst formation, SGPT	dog	oral-capsule
cis-1,2-Dichloroethene	0.02	g	0.002	a	3000 x 1	kidney	increased relative kidney weight	rat	oral-gavage
Diethylether	2	b	0.2	a	3000 x1	whole body	depressed body weights	rat	oral
Ethylbenzene	0.05	g	0.05	h					
Methylene Chloride	0.006	d	0.006	a	30 x 1	liver	hepatic effects (hepatic vacuolation, liver foci)	rat	drinking water
Naphthalene	0.2	c	0.02	a	3000 x 1	whole body	decreased body weight	rat	oral-gavage
Tetrachloroethene	0.006	d	0.006	a	1000 x 1	nervous system	neurotoxicity	human	inhalation
Toluene	0.8	g	0.08	a	3000 x 1	liver, kidney	organ weight changes	rat	oral-gavage
Trichloroethene	0.0005	d	0.0005	a	multiple	immune system, heart	immunological effects, heart malformations	rat, mouse	drinking water
Vinyl Chloride	0.003	d	0.003	a	30 x 1	liver	liver cell polymorphism	rat	feeding study
Xylene (Total)	0.4	g	0.2	a	1000 x 1	CNS, whole body	hyperactivity, decreased body weight, increased mortality	rat	oral-gavage
Styrene	2	c	0.2	a	1000 x 1	red blood cells, liver	Red blood cell and liver effects	dog	oral
1,2-Dichloropropane									
1,2,3-Trichloropropane	0.08	ai	0.004	a	300 x1	liver	increased absolute liver weight	male rats	oral-gavage
1,4-Dioxane	0.03	d	0.03	a	300 x 1	liver and kidney	liver and kidney toxicity	rat	oral
2,4-Dimethylphenol	0.05	g	0.02	a	3000 x 1	blood, whole body	lethargy, prostration, and ataxia; hematological changes	mouse	oral-gavage
1-Methylnaphthalene	0.007	d	0.007	ag		lung	pulmonary alveolar proteinosis	mouse	oral-diet
2-Methylnaphthalene	0.004	d	0.004	a	1000x1	lung	Pulmonary alveolar proteinosis	mouse	oral-diet
2-Methylphenol	0.5	b	0.05	a	1000 x 1	CNS	decreased body weights and neurotoxicity	rat	oral-gavage
4-Methylphenol	0.005	b	0.005	b	1000 x 1	CNS, resp.,body	hypoactivity, distress, maternal death	rabbit	oral-gavage
Acenaphthene	0.2	g	0.06	a	3000 x 1	liver	hepatoxicity	mouse	oral-gavage
Acenaphthylene	0.3	f	0.03	f					
Anthracene	1	g	0.3	a	3000 x 1	NA	no observed effects	mouse	oral-gavage
Benzo(a)Anthracene	0.3	f	0.03	f					
Benzo(a)Pyrene	0.3	f	0.03	f					
Benzo(e)Pyrene									
Benzo(b)Fluoranthene	0.3	f	0.03	f					
Benzo(g,h,i)Perylene	0.3	f	0.03	f					
Benzo(k)Fluoranthene	0.3	f	0.03	f					
Bis(2-Ethylhexyl)phthalate	0.02	d	0.02	a	1000 x 1	liver	increased relative liver weight	guinea pig	oral-diet
Butylbenzylphthalate	2	b	0.2	a	1000 x 1	liver	significant increased liver to body weight ratio	rat	oral-diet
Chrysene	0.3	f	0.03	f					
Dibenzo(a,h)anthracene	0.3	f	0.03	f					
Dibenzofuran	0.004	g	0.001	ag		whole body	aggregate critical effects of reduced length and organ weight and excess abdominal fat	rat	oral-diet
Di-n-butylphthalate	1	b	0.1	a	1000 x 1	mortality	increased mortality	rat	oral-diet
Fluoranthene	0.4	b	0.04	a	3000 x 1	kidney, liver	nephropathy, increased liver weights, hematological alterations	mouse	oral-gavage
Fluorene	0.4	b	0.04	a	3000 x 1	blood	decreased red blood cell and hemoglobin	mouse	oral-gavage
Indeno(1,2,3-cd)Pyrene	0.3	f	0.03	f					
Phenanthrene	0.3	f	0.03	f					
Phenol	0.3	d	0.3	a	100 x 1	whole body	decreased maternal weight	rat	oral-gavage
Pyrene	0.3	b,g	0.03	a	3000 x 1	kidney	tubular pathology, decreased organ weight	mouse	oral-gavage
bis(2-Chloroethoxy)methane	0.03	g	0.003	g		liver	lesions	rat	oral-gavage
Pentachlorophenol	0.005	d	0.005	a	300 x 1	liver	hepatoxicity	beagle dog	oral- gelatin capsules
3,3-Dichlorobenzidine									
C11-C22 Aromatic Fraction	0.3	f	0.03	f					
C19-C36 Aliphatic Fraction	6	f	2	f		liver	liver granuloma		
C5-C8 Aliphatic Fraction	0.4	f	0.04	f		whole body and nervous system	reduced body weight and neurotoxicity at higher doses	rat	
C9-C10 Aromatic Fraction	0.3	f	0.03	f					
C9-C18 Aliphatic Fraction	1	f	0.1	f	1000 5000	reproduction and liver	changes in serum chemistry and liver weight		oral
4,4'-DDD	0.0005	k	0.0005	k					
4,4'-DDE	0.0005	k	0.0005	k					
4,4'-DDT	0.0005	b	0.0005	a	100 x 1	liver	lesions	rat	oral-diet
alpha-BHC	0.003	s	0.0003	l					
beta-BHC	0.003	l	0.0003	l					
Dieldrin	0.00005	b	0.00005	a	100 x 1	liver	lesions	rat	oral-diet
Endrin Ketone	0.0003	p	0.0003	p					
gamma-BHC	0.003	b	0.0003	a	1000 x 1	liver, kidney	toxicity	rat	oral-diet
Heptachlor Epoxide	0.000013	b	0.000013	a	1000 x 1	liver	increased liver to body weight ratio	dog	oral-diet
Hexachlorobenzene	0.00001	ag	0.00001	g,h		ovary	Degenerative changes in primary ovarian follicles	monkey	oral-capsule
Methoxychlor	0.005	b	0.005	a	1000 x 1	developmental	excessive loss of litters	rabbit	oral
2,4-D	0.01	b	0.01	a	100 x 1	blood, liver, kidney	hematologic, hepatic and renal toxicity	rat	oral
2,4,5-T	0.1	b	0.01	a	300 x 1	blood, reproduction	increased urinary corproporphyrins, reduced neonatal survival	rat	feeding study
Dicamba	0.03	b	0.03	a	100 x 1	developmental	reduced net weight gain, reduced fetal body weight, and increased post implantation loss	rabbit	oral-gavage
Aroclor - 1242	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1248	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1254	0.00005	b	0.00002	a	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1260	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1262	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1268	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Antimony	0.0004	b	0.0004	a	1000 x 1	blood	longevity, blood glucose, and cholesterol	rat	oral
Arsenic	0.0003	d	0.0003	a	3 x 1	skin	hyperpigmentation and keratosis	human	oral-diet
Barium	0.07	b	0.2	a	3 x 1	NA	no adverse effects	human	oral-water
Beryllium	0.005	b	0.002	a	300 x 1	small intestine	small intestinal lesions	dog	oral-diet
Cadmium	0.001	d,ab	0.001	a,ab	10 x 1	kidney	significant proteinuria	human	oral-diet
Chromium (total)	0.02	b,ak	0.003	a,ak	300 x 3	NA	no effects observed	rat	oral-diet
Copper	0.037	d	0.037	v					
Cyanide	0.006	c	0.0006	a	3000 x 1	reproduction	Decreased cauda epididymis weight	male rats	oral-water
Iron	0.7	g	0.7	g		Gastrointestinal tract	Gastrointestinal effects	human	oral-diet
Lead	0.00075	c,e	0.00075	c,e		developmental, kidney, blood pressure	Delays in physical or mental development for infants and children, kidney problem and high blood pressure for adults		
Mercury	0.0003	d	0.0003	c					
Nickel	0.02	b	0.02	a,y	300 x 1	whole body	decreased body weights and organ weights	rat	oral-diet
Selenium	0.005	b	0.005	a	3 x 1	skin, blood, CNS	selenosis	human	oral
Silver	0.005	b	0.005	a	3 x 1	skin	argyria	human	intravenous
Thallium	0.0008	c,i	0.00008	c,i	1000 x 1	hair follicles	atrophy of hair follicles	rat	oral-water
Vanadium	0.009	a,aa	0.009	a,aa	100 x 1	hair cystine	Decrease hair cystine	rat	oral
Zinc	0.3	b	0.3	a	3 x 1	metabolism	copper balance affected	human	oral-diet

Hierarchy of Sources:

a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Assessment Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. Chronic oral RfD has been used here as subchronic oral RfD equivalent.
e. Derived from the USEPA Action Level for lead for Treatment Technique (0.015 milligrams per liter, mg/L). The derivation is presented in the MassDEP (1992) Risk Assessment ShortForm - Residential Scenario.
f. MassDEP, Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MassDEP VPH/EPH Approach, Final Policy (#WSC-02-411). Table 4-13. December 2002.
g. US EPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV); current as of February, 2016.
h. PPRTV subchronic value used as chronic RfD.
i. The toxicity value for thallium was withdrawn from IRIS. MassDEP continues to use it pending new toxicity information.
k. Value for 4,4'-DDT was used for 4,4'-DDD and 4,4'-DDE.
l. Value for gamma-BHC was used for alpha-BHC and beta-BHC.
m. Value from IRIS for Aroclor 1254 was used for all other Aroclors listed.
p. Value for Endrin was used for Endrin Ketone.
s. Value for 1,2,4-trichlorobenzene was used for 1,2,3-trichlorobenzene.
v. The oral RfD for copper was derived based on the Massachusetts MCL for copper (1.3 mg/L), assuming a drinking water rate of 2 liters per day and a body weight of 70 kg.
z. Value for 1,2-Dichlorobenzene was used for 1,3-Dichlorobenzene and 1,4-Dichlorobenzene.
aa. Value for vanadium pentoxide.
ab. Oral toxicity values for 'Cadmium (Diet)' (1 x10-3 mg/kg-day) used for soil exposures.
ag. PPRTV screening value.
ak. Values for hexavalent chromium (CrVI).

Notes:
1. A blank space indicates no data found.

Abbreviations:

CNS=Central nervous system; SGPT=Serum glutamic pyruvic transaminase; COC = Constituent of Concern; MF= Modifying Factor; NA= Not Applicable; RfD = Reference Dose; UF= Uncertainty Factor.
EPH = Extractable Petroleum Hydrocarbon; VPH = Volatile Petroleum Hydrocarbon

DRAFT

TABLE F-6
SUMMARY OF DOSE-RESPONSE INFORMATION - NONCARCINOGENIC EFFECTS - INHALATION
1 Horizon Way
Everett, Massachusetts

DRAFT

COC	Inhalation Subchronic Reference Concentration (mg/m³)		Inhalation Chronic Reference Concentration (mg/m³)		Chronic Inhalation RfC UF x MF	Target Organ/System	Critical Effect	Study Animal	Study Method
1,1,1-Trichloroethane	5	a	5	a		liver	Liver histopathologic changes	rat	Inhalation
1,1-Dichloroethane	8	x	0.8	x					
1,2,3-Trichlorobenzene	0.02	o	0.002	o					
1,2,4-Trichlorobenzene	0.02	h	0.002	h		urinary	Significant changes in coproporphyrin and uroporphyrin excretion	rat	inhalation
1,2-Dichlorobenzene	2.4	i	0.8	i					
1,2-Dichloroethane	0.07	h	0.007	h		Neurological	Neurobehavioral impairment	human	inhalation
1,3-Dichlorobenzene	2.4	i	0.8	i					
1,4-Dichlorobenzene	2.4	c	0.8	a	100 x 1	liver	increased organ weight	rat	inhalation
2-Butanone	5	d	5	a	300 x 1	fetus	developmental toxicity	mouse	developmental
2-Chlorotoluene	0.8	h							
Acetone	0.8	d	0.8	e					
Benzene	0.01	d	0.01	e					
Carbon Disulfide	0.7	b	0.7	a	30 x 1	PNS	peripheral nervous system dysfunction	human	Inhalation-occupat.
Chlorobenzene	0.5	h	0.05	h		liver, kidney	Increased weight and hepatocellualr hypertrophy; Increased weights, tubule dilation, inflamation of the interstitial cells, and regeneration of the epithelium in males	rat	inhalation
Chloroform	0.66	d	0.66	e					
cis-1,2-Dichloroethene	0.06	x	0.006	x					
Diethylether	1.6	e	1.6	e					
Ethylbenzene	9	h	1	a	300 x 1	fetus	developmental toxicity	rat/rabbit	inhalation
Methylene Chloride	0.6	d	0.6	a	100 x 1	liver	hepatic effects (hepatic vacuolation)	rat	inhalation
Naphthalene	0.003	d	0.003	a	3000 x 1	respiratory system	hyperplasia and metaplasia in epithelium	mouse	inhalation
Tetrachloroethene	0.04	d	0.04	a		nerve	neurotoxicity	humans	Inhalation-occupat.
Toluene	5	d	5	a		CNS	neurological effects	humans	Inhalation-occupat.
Trichloroethene	0.002	d	0.002	a	Multiple (10, 100)	hepatic, renal, neurological, immunological, reproductive, and developmental	critical effects		
Vinyl Chloride	0.1	d	0.1	a	30 x 1	liver	liver cell polymorphism	rat	feeding study
Xylene (Total)	0.4	h	0.1	a	300 x 1	CNS	impaired motor coordination	rat	inhalation
Styrene	3	b,c	1	a	30 x 1	CNS	CNS effects	human	occupational, inhalation
1,2-Dichloropropane	0.012	c	0.004	a	300 x 1	nasal cavity	Hyperplasia of the nasal mucosa	rat	inhalation
1,2,3-Trichloropropane	0.0003	d	0.0003	a	3000x1	bronchus	peribronchial lymphoid hyperplasia	male rats	inhalation
1,4-Dioxane	0.03	d	0.03	a		epithelium	astrophy and respiratory metaplasia of the olfactory epithelium	male rats	inhalation
2,4-Dimethylphenol	0.2	x	0.07	x					
1-Methylnaphthalene	0.5	j	0.05	j					
2-Methylnaphthalene	0.5	t	0.05	t					
2-Methylphenol	0.175	d	0.175	x					
4-Methylphenol	0.12	d	0.12	e					
Acenaphthene	0.5	t	0.05	t					
Acenaphthylene	0.5	t	0.05	t					
Anthracene	0.5	t	0.05	t					
Benzo(a)Anthracene	0.5	t	0.05	t					
Benzo(a)Pyrene	0.5	t	0.05	t					
Benzo(e)Pyrene									
Benzo(b)Fluoranthene	0.5	t	0.05	t					
Benzo(g,h,i)Perylene	0.5	t	0.05	t					
Benzo(k)Fluoranthene	0.5	t	0.05	t					
Bis(2-Ethylhexyl)phthalate	0.007	d	0.007	e					
Butylbenzylphthalate									
Chrysene	0.5	t	0.05	t					
Dibenzo(a,h)anthracene	0.5	t	0.05	t					
Dibenzofuran									
Di-n-butylphthalate									
Fluoranthene	0.5	t	0.05	t					
Fluorene	0.5	t	0.05	t					
Indeno(1,2,3-cd)Pyrene	0.5	t	0.05	t					
Phenanthrene	0.5	t	0.05	t					
Phenol	0.26	d	0.26	e					
Pyrene	0.5	t	0.05	t					
bis(2-Chloroethoxy)methane									
Pentachlorophenol	0.00007	d	0.00007	c					
3,3-Dichlorobenzidine									
C11-C22 Aromatic Fraction	0.5	g	0.05	g					
C19-C36 Aliphatic Fraction									
C5-C8 Aliphatic Fraction	0.2	g	0.2	g		neurological	neurotoxicity	epidemiology study	
C9-C10 Aromatic Fraction	0.5	g	0.05	g					
C9-C18 Aliphatic Fraction	0.6	g	0.2	g		nervous system	changes in blood chemistry, body and liver weight, neurotoxicity	rats	inhalation
4,4'-DDD	0.00175	d	0.00175	x					
4,4'-DDE	0.00175	d	0.00175	x					
4,4'-DDT	0.00175	d	0.00175	x					
alpha-BHC	0.0011	aa	0.0011	aa					
beta-BHC	0.0011	aa	0.0011	aa					
Dieldrin	0.000175	d	0.000175	x					
Endrin Ketone	0.0011	ad	0.0011	ad					
gamma-BHC	0.011	x	0.0011	x					
Heptachlor Epoxide	0.000046	d	0.000046	x					
Hexachlorobenzene	0.00004	x	0.00004	x					
Methoxychlor	0.018	d	0.018	x					
2,4-D									
2,4,5-T									
Dicamba									
Aroclor - 1242	0.00002	d	0.00002	e,ag					
Aroclor - 1248	0.00002	d	0.00002	e,ag					
Aroclor - 1254	0.00002	d	0.00002	e,ag					
Aroclor - 1260	0.00002	d	0.00002	e,ag					
Aroclor - 1262	0.00002	d	0.00002	e,ag					
Aroclor - 1268	0.00002	d	0.00002	e,ag					
Antimony	0.01	d	0.01	e					
Arsenic	0.00002	d	0.00002	e					
Barium	0.005	b	0.0005	b	1000 x 1	fetus	fetotoxicity	rat	inhalation-intermittent
Beryllium	0.00002	d	0.00002	a	10 x 1	lung	chronic beryllium disease	human-male	Inhalation-occupat.
Cadmium	0.00002	d	0.00002	e					
Chromium (total)	0.0003	c,af	0.0001	a,af					
Copper	0.003	d	0.003	e					
Cyanide	0.003	c	0.0008	a		thyroid	Thyroid enlargement and altered iodide uptake	Epidemiology study	inhalation
Iron									
Lead	0.001	d	0.001	e					
Mercury	0.0003	d,r	0.0003	a,r	30 x 1	CNS	neurotoxicity	human	Inhalation-occupat.
Nickel	0.001	d	0.001	e					
Selenium	0.003	d	0.003	e					
Silver	0.00014	d	0.00014	c					
Thallium	0.000014	d	0.000014	c					
Vanadium	0.001	d	0.001	c					
Zinc	0.0014	d	0.0014	c					

Hierarchy of Sources:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. Chronic RfC has been used here as subchronic RfC as a conservative step.

e. Allowable Threshold Concentration (ATC) calculated following Chemical Health Effects Assessment Methodology and the Method to Derive Allowable Ambient Limits (CHEM/AAL). ORS Report 90-1. ATC = 5 x TEL. TELs listed in MassDEP, 2014.
g. MassDEP (2003), Final Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology. See: http://www.mass.gov/dep/cleanup/laws/tphtox03.doc
h. US EPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV); current as of February, 2016.
i. The chronic and subchronic RfCs for 1,4-Dichlorobenze are used for 1,2-Dichlorobenzene and 1,3- Dichlorobenzene.
j. Values for 2-methylnaphthalene were used for 1-methylnaphthalene.
o. Value for 1,2,4-Trichlorobenzene was used for 1,2,3-Trichlorobenzene
r. Value for elemental mercury.
t. Toxicity values for PAHs are consistent with the approach presented in "Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology" MassDEP 2003 and Characterizing Risks Posed by Petroleum Contaminated Sites MassDEP 2002.
x. MassDEP 2014 ShortForm. MassDEP approach to convert oral RfD to RfC using RfC (mg/m3) = [RfD (mg/kg-day) * Body Weight (70 kg)] / Ventilation Rate (20 m3/day)
aa. Value for gamma-BHC was used for alpha-BHC and beta-BHC.
ad. Value for Endrin was used for Endrin Ketone.
af. Values for hexavalent chromium (CrVI).
ag. ATC for polychlorinated biphenyls (PCBs), not Aroclor-specific, used.

Notes:
1. A blank space indicates no data found.

Abbreviations:
CNS = Central nervous system; PNS = Peripheral nervous system; COC = Constituent of Concern; MF = Modifying Factor; NA = Not Applicable/Not Available; RfC = Reference Concentration; UF = Uncertainty Factor.
EPH = Extractable Petroleum Hydrocarbon; VPH = Volatile Petroleum Hydrocarbon; APH = Air-Phase Petroleum Hydrocarbons; PAH = Polycyclic Aromatic Hydrocarbon.

TABLE F-7
SUMMARY OF DOSE-RESPONSE INFORMATION CARCINOGENIC EFFECTS
1 Horizon Way
Everett, Massachusetts

COC	Weight of Evidence Class		Oral Cancer Slope Factor (mg/kg/day)$^{-1}$		Target Organ/System (oral)	Study Animal	Study Method	Inhalation Unit Risk (µg/m^3)$^{-1}$		Target Organ/System (Inhalation)	Study Animal	Study Method
1,1,1-Trichloroethane	inadequate information to assess carcinogenic potential	a										
1,1-Dichloroethane	C	a						1.6E-6	o			
1,2,3-Trichlorobenzene	Inadequate information to assess carcinogenic potential	k										
1,2,4-Trichlorobenzene	Likely to be carcinogenic to humans	k	2.9E-02	k	liver	mouse	oral					
1,2-Dichlorobenzene	D	a										
1,2-Dichloroethane	B2	a	9.1E-02	a	blood	rat	gavage	2.6E-5	a	blood	rat	gavage
1,3-Dichlorobenzene	D	a										
1,4-Dichlorobenzene	C	b	2.4E-02	b	liver	mouse	gavage	6.9E-6	i			
2-Butanone	D	a										
2-Chlorotoluene												
Acetone	D	a										
Benzene	A	a	5.5E-02	a	blood	human	inhalation	7.8E-6	c	blood	human	inhalation
Carbon Disulfide												
Chlorobenzene	D	a										
Chloroform	B2	a						2.3E-5	a	liver	mouse	oral-gavage
cis-1,2-Dichloroethene	D	a										
Diethylether												
Ethylbenzene	D	a										
Methylene Chloride	likely to be carcinogenic in humans	a	2.0E-03	a	liver	mouse	oral-drinking water	1.0E-8	a	liver, lung	mouse	inhalation
Naphthalene	C	a										
Tetrachloroethene	likely to be carcinogenic in humans by all routes of exposure	a	2.0E-02	c				3.0E-6	c			
Toluene	D	a										
Trichloroethene	carcinogenic to humans	a	4.6E-02	a				5.0E-6	a	Renal, non-Hodgkin's lymphoma, and liver	human	inhalation
Vinyl Chloride	A	a	1.4E+00	a	liver	rat	oral-diet	8.8E-6	a	liver	rat	inhalation
Xylene (Total)	D	a										
Styrene	B2	c	3.0E-02	c				5.7E-7	c			
1,2-Dichloropropane	B2	b	6.8E-02	b	liver	mouse	oral-gavage	1.9E-5	d			
1,2,3-Trichloropropane	likely to be carcinogenic to humans	a	3.0E+01	a	multiple	female mouse	oral-gavage					
1,4-Dioxane	likely to be carcinogenic to humans	a	1.0E-01	a	hepatocellular adenomas and carcinomas	mouse	oral-water	5.0E-6	a	multiple (nasal, liver, kidney, peritoneal, mammary gland, and zymbal gland)	male rats	inhalation
2,4-Dimethylphenol												
1-Methylnaphthalene			2.9E-02	k	lung	mouse	oral					
2-Methylnaphthalene												
2-Methylphenol	C	a										
4-Methylphenol	C	a										
Acenaphthene												
Acenaphthylene	D	a										
Anthracene	D	a										
Benzo(a)Anthracene	B2	a	7.3E-01	g				2.1E-4	i			
Benzo(a)Pyrene	B2	a	7.3E+00	a	forestomach	mouse	oral-diet	2.1E-3	i			
Benzo(e)Pyrene												
Benzo(b)Fluoranthene	B2	a	7.3E-01	g				2.1E-4	i			
Benzo(g,h,i)Perylene	D	a										
Benzo(k)Fluoranthene	B2	a	7.3E-02	g				2.1E-5	i			
Bis(2-Ethylhexyl)phthalate	B2	a	1.4E-02	a	liver	mouse	oral-diet	1.3E-6	d			
Butylbenzylphthalate	C	a										
Chrysene	B2	a	7.3E-02	g				2.1E-5	i			
Dibenzo(a,h)anthracene	B2	a	7.3E+00	g				2.1E-3	i			
Dibenzofuran	D	a										
Di-n-butylphthalate	D	a										
Fluoranthene	D	a										
Fluorene	D	a										
Indeno(1,2,3-cd)Pyrene	B2	a	7.3E-01	g				2.1E-4	i			
Phenanthrene	D	a										
Phenol	D	a										
Pyrene	D	a										
bis(2-Chloroethoxy)methane												
Pentachlorophenol	B2	a	4.0E-01	a	liver	mouse	diet	1.0E-4	i			
3,3-Dichlorobenzidine	B2	a	4.5E-01	a				1.3E-4	i			
C11-C22 Aromatic Fraction												
C19-C36 Aliphatic Fraction												
C5-C8 Aliphatic Fraction												
C9-C10 Aromatic Fraction												
C9-C18 Aliphatic Fraction												
4,4'-DDD	B2	a	2.4E-01	a	liver	mouse	diet	6.9E-5	i			
4,4'-DDE	B2	a	3.4E-01	a	liver	mouse	diet	9.7E-5	i			
4,4'-DDT	B2	a	3.4E-01	a	liver	mouse, rat	diet	9.7E-5	a	liver	mouse, rat	diet
alpha-BHC	B2	a	6.3E+00	a	liver	mouse	diet	1.8E-3	a	liver	mouse	diet
beta-BHC	C	a	1.8E+00	a	liver	mouse	diet	5.3E-4	a	liver	mouse	oral-diet
Dieldrin	B2	a	1.6E+01	a	liver	mouse	oral-diet	4.6E-3	a	liver	mouse	oral-diet
Endrin Ketone												
gamma-BHC	B2-C	b	1.3E+00	b	liver	mouse	oral-diet	3.7E-4	i			
Heptachlor Epoxide	B2	a	9.1E+00	a	liver	mouse	oral-diet	2.6E-3	a	liver	mouse	oral-diet
Hexachlorobenzene	B2	a	1.6E+00	a	liver	rat/Sprague-Dawley, female	diet	4.6E-4	a	derived from oral data		
Methoxychlor	D	a										
2,4-D												
2,4,5-T												
Dicamba												
Aroclor - 1242	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1248	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1254	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1260	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1262	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1268	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Antimony												
Arsenic	A	a	1.5E+00	a	skin	human	oral water	3.0E-3	c	lung	human	Inhalation-occupat.
Barium	D	a										
Beryllium	B1	a, j						2.4E-3	a	lung	human	inhalation-occupat.
Cadmium	B1	a, j						1.8E-3	a	lung, trachea	human	Inhalation-occupat.
Chromium (total)	D	a						1.2E-2	a,t			
Copper	D	a										
Cyanide	D	a										
Iron												
Lead	B2	a										
Mercury	D	a										
Nickel	A (Nickel Refinery Dust and Nickel Subsulfide)	a						4.8E-4	a,s			
Selenium	D	a										
Silver	D	a										
Thallium												
Vanadium												
Zinc	D	a										

Hierarchy of Sources:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. MassDEP, Chemical Health Effects Assessment Methodology and the Method to Derive Allowable Ambient Limits (CHEM/AAL). ORS Report 90-1.
g. MassDEP 2014 ShortForm (v0414.xlsx). This Cancer Slope Factor or Unit Risk for benzo(a)pyrene (from IRIS) has been applied to the seven PAH compounds which are designated as category A, B1, B2 or C carcinogens.
i. Conversion of the oral Cancer Slope Factor to the inhalation Unit Risk, using the equation: Slope Factor x Ventilation Rate x Constant / Body Weight: (CSF x V x C)/BW = (CSF x 20 m3/day x 0.001 mg/µg) / 70 kg
j. Beryllium and cadmium are B1 carcinogens by the inhalation route only. CSFs are not applicable.
k. US EPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). Current as of February, 2016.
o. CalEPA. Hot Spots Unit Risk and Cancer Potency Values published by the Office of Environmental Health Hazard Assessment (updated 2011).
s. The inhalation unit risk value for nickel subsulfide was used.
t. Value for hexavalent chromium (CrVI).

Notes:

1. Weight of evidence classification:
   - A: Human carcinogen
   - B: Probable human carcinogen
     - B1: Limited evidence of carcinogenicity in humans from epidemiological studies
     - B2: Sufficient evidence of carcinogenicity in animals, inadequate evidence in humans
   - C: Possible human carcinogen
   - D: Not classified
   - E: No evidence of carcinogenicity
2. Inhalation unit risk is defined as the risk per concentration unit in air, e.g. risk per µg/m³.
3. Blank space indicates no data available.

Abbreviations:
COC = constituent of concern; CSF = cancer slope factor.

TABLE F-8
RELATIVE ABSORPTION FACTORS
1 Horizon Way
Everett, Massachusetts

DRAFT

COC	Exposure Pathways	
	Oral Soil	
	Carcinogen	Non-Carcinogen
1,1,1-Trichloroethane		1 a
1,1-Dichloroethane		1 a
1,2,3-Trichlorobenzene		
1,2,4-Trichlorobenzene		1 a
1,2-Dichlorobenzene		1 a
1,2-Dichloroethane	1 a	1 a
1,3-Dichlorobenzene		1 a
1,4-Dichlorobenzene	1 a	1 a
2-Butanone		1 a
2-Chlorotoluene		
Acetone		1 a
Benzene	1 a	1 a
Carbon Disulfide		1 b
Chlorobenzene		1 a
Chloroform		1 a
cis-1,2-Dichloroethene		1 a
Diethylether		
Ethylbenzene		1 a
Methylene Chloride	1 a	1 a
Naphthalene		0.3 a
Tetrachloroethene	1 a	1 a
Toluene		1 a
Trichloroethene	1 a	1 a
Vinyl Chloride	1 a	1 a
Xylene (Total)		1 a
Styrene	1 a	1 a
1,2-Dichloropropane	1 a	1 a
1,2,3-Trichloropropane		
1,4-Dioxane	1 a	1 a
2,4-Dimethylphenol		1 b
1-Methylnaphthalene		0.3 e
2-Methylnaphthalene		0.3 a
2-Methylphenol		1 b
4-Methylphenol		1 b
Acenaphthene		0.3 a
Acenaphthylene		0.3 a
Anthracene		0.3 a
Benzo(a)Anthracene	0.3 a	0.3 a
Benzo(a)Pyrene	0.3 a	0.3 a
Benzo(e)Pyrene		
Benzo(b)Fluoranthene	0.3 a	0.3 a
Benzo(g,h,i)Perylene		0.3 a
Benzo(k)Fluoranthene	0.3 a	0.3 a
Bis(2-Ethylhexyl)phthalate	1 a	1 a
Butylbenzylphthalate		0.96 b
Chrysene	0.3 a	0.3 a
Dibenzo(a,h)anthracene	0.3 a	0.3 a
Dibenzofuran		
Di-n-butylphthalate		0.96 b
Fluoranthene		0.3 a
Fluorene		0.3 a
Indeno(1,2,3-cd)Pyrene	0.3 a	0.3 a
Phenanthrene		0.3 a
Phenol		1 a
Pyrene		0.3 a
bis(2-Chloroethoxy)methane		
Pentachlorophenol	1 a	1 a
3,3-Dichlorobenzidine	1 a	1 a
C11-C22 Aromatic Fraction		0.3 a
C19-C36 Aliphatic Fraction		1 a
C5-C8 Aliphatic Fraction		1 a
C9-C10 Aromatic Fraction		1 a
C9-C18 Aliphatic Fraction		1 a
4,4'-DDD	1 a	1 a
4,4'-DDE	1 a	1 a
4,4'-DDT	1 a	1 a
alpha-BHC	1 g	1 g
beta-BHC	1 g	1 g
Dieldrin	1 a	1 a
Endrin Ketone		1 i
gamma-BHC	1 a	1 a
Heptachlor Epoxide	1 a	1 a
Hexachlorobenzene	1 a	1 a
Methoxychlor		1 a
2,4-D		0.96 b
2,4,5-T		0.96 b
Dicamba		1 b
Aroclor - 1242	1 a	1 a
Aroclor - 1248	1 a	1 a
Aroclor - 1254	1 a	1 a
Aroclor - 1260	1 a	1 a
Aroclor - 1262	1 a	1 a
Aroclor - 1268	1 a	1 a
Antimony		1 a
Arsenic	0.5 a	0.5 a
Barium		1 a
Beryllium		1 a
Cadmium		1 a
Chromium (total)		1 a
Copper		0.7 b
Cyanide		1 a
Iron		0.71 b
Lead		0.3 c
Mercury		0.5 a
Nickel		1 a
Selenium		1 a
Silver		1 a
Thallium		1 a
Vanadium		1 a
Zinc		1 a

Notes:
a. MassDEP 2014 ShortForm (v0414.xlsx).
b. GZA-derived value based on the default absorption efficiencies listed in Table B-11 of the MassDEP (1995) guidance.
c. USEPA 2007. User's Guide for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) Windows.
e. Value for 2-methylnaphthalene used for 1-methylnaphthalene.
g. Absorption values for gamma-BHC were used for alpha-BHC and beta-BHC.
i. Absorption values for Endrin were used for Endrin Ketone.

Notes:
1. A blank space indicates no data found.
2. Where data are lacking, a default value of 1 is used in subsequent risk calculations.

Abbreviations:
COC = Constituent of Concern; RAF = Relative Absorption Factors.

TABLE F-9
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Commercial/Industrial Workers
SUBCHRONIC NON-CANCER EFFECTS

DRAFT

Exposure to Dust via Gastrointestinal Tract

See TABLE F-3 for Exposure Variables and Rationale

$$ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}}$$

See TABLE F-2 for Exposure Point Concentration Derivation

$$HQ_{soil\text{-}oral} = \frac{ADD_{soil\text{-}oral}}{RfD} \qquad HI_{soil\text{-}oral} = S\ HQ_{soil\text{-}oral}$$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{soil\text{-}oral}$ (mg/kg-day)	RfD SubChronic (mg/kg-day)	$HQ_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	4.6E-10	7.0E+00	6.5E-11
1,1-Dichloroethane	0.0036	1	4.5E-10	2.0E+00	2.3E-10
1,2,3-Trichlorobenzene	0.031	1	3.9E-09	8.0E-03	4.9E-07
1,2,4-Trichlorobenzene	0.33	1	4.1E-08	9.0E-02	4.6E-07
1,2-Dichlorobenzene	0.0095	1	1.2E-09	9.0E-01	1.3E-09
1,2-Dichloroethane	0.011	1	1.4E-09	2.0E-02	7.0E-08
1,3-Dichlorobenzene	0.0096	1	1.2E-09	9.0E-01	1.3E-09
1,4-Dichlorobenzene	0.011	1	1.3E-09	9.0E-01	1.5E-09
2-Butanone	0.030	1	3.8E-09	6.0E-01	6.3E-09
2-Chlorotoluene	0.0032	1	4.1E-10	2.0E-01	2.0E-09
Acetone	0.090	1	1.1E-08	2.7E+00	4.2E-09
Benzene	0.0092	1	1.2E-09	1.0E-02	1.2E-07
Carbon Disulfide	0.026	1	3.2E-09	1.0E-01	3.2E-08
Chlorobenzene	0.0032	1	4.1E-10	7.0E-02	5.8E-09
Chloroform	0.0064	1	8.0E-10	1.0E-02	8.0E-08
cis-1,2-Dichloroethene	0.0042	1	5.3E-10	2.0E-02	2.7E-08
Diethylether	0.0034	1	4.3E-10	2.0E+00	2.2E-10
Ethylbenzene	0.018	1	2.2E-09	5.0E-02	4.4E-08
Methylene Chloride	0.017	1	2.1E-09	6.0E-03	3.5E-07
Naphthalene	0.87	0.3	3.3E-08	2.0E-01	1.6E-07
Tetrachloroethene	0.0032	1	4.1E-10	6.0E-03	6.8E-08
Toluene	0.016	1	2.0E-09	8.0E-01	2.4E-09
Trichloroethene	0.011	1	1.4E-09	5.0E-04	2.9E-06
Vinyl Chloride	0.0059	1	7.4E-10	3.0E-03	2.5E-07
Xylene (Total)	0.038	1	4.7E-09	4.0E-01	1.2E-08
Styrene	0.0043	1	5.4E-10	2.0E+00	2.7E-10
1,2-Dichloropropane	0.0033	1	4.2E-10	NA	NC
1,2,3-Trichloropropane	0.0032	1	4.1E-10	8.0E-02	5.1E-09
1,4-Dioxane	0.12	1	1.5E-08	3.0E-02	4.9E-07
2,4-Dimethylphenol	0.67	1	8.4E-08	5.0E-02	1.7E-06
1-Methylnaphthalene	2.6	0.3	1.0E-07	7.0E-03	1.4E-05
2-Methylnaphthalene	0.96	0.3	3.6E-08	4.0E-03	9.1E-06
2-Methylphenol	0.66	1	8.3E-08	5.0E-01	1.7E-07
4-Methylphenol	1.5	1	1.9E-07	5.0E-03	3.9E-05
Acenaphthene	1.2	0.3	4.5E-08	2.0E-01	2.3E-07
Acenaphthylene	0.78	0.3	2.9E-08	3.0E-01	9.8E-08
Anthracene	1.9	0.3	7.2E-08	1.0E+00	7.2E-08
Benzo(a)Anthracene	2.6	0.3	9.7E-08	3.0E-01	3.2E-07
Benzo(a)Pyrene	1.9	0.3	7.1E-08	3.0E-01	2.4E-07
Benzo(e)Pyrene	2.8	1	3.5E-07	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	8.7E-08	3.0E-01	2.9E-07
Benzo(g,h,i)Perylene	1.1	0.3	4.0E-08	3.0E-01	1.3E-07
Benzo(k)Fluoranthene	1.5	0.3	5.7E-08	3.0E-01	1.9E-07
Bis(2-Ethylhexyl)phthalate	717	1	9.0E-05	2.0E-02	4.5E-03
Butylbenzylphthalate	0.68	0.96	8.2E-08	2.0E+00	4.1E-08
Chrysene	2.2	0.3	8.2E-08	3.0E-01	2.7E-07
Dibenzo(a,h)anthracene	0.54	0.3	2.1E-08	3.0E-01	6.8E-08
Dibenzofuran	1.0	1	1.3E-07	4.0E-03	3.2E-05
Di-n-butylphthalate	0.66	0.96	8.0E-08	1.0E+00	8.0E-08
Fluoranthene	5.4	0.3	2.0E-07	4.0E-01	5.1E-07
Fluorene	1.3	0.3	5.0E-08	4.0E-01	1.2E-07
Indeno(1,2,3-cd)Pyrene	1.1	0.3	4.1E-08	3.0E-01	1.4E-07
Phenanthrene	5.3	0.3	2.0E-07	3.0E-01	6.7E-07
Phenol	0.99	1	1.2E-07	3.0E-01	4.2E-07
Pyrene	4.2	0.3	1.6E-07	3.0E-01	5.3E-07
bis(2-Chloroethoxy)methane	0.67	1	8.4E-08	3.0E-02	2.8E-06
Pentachlorophenol	2.7	1	3.4E-07	5.0E-03	6.8E-05
3,3-Dichlorobenzidine	1.3	1	1.6E-07	NA	NC
C11-C22 Aromatic Fraction	454	0.3	1.7E-05	3.0E-01	5.7E-05
C19-C36 Aliphatic Fraction	665	1	8.4E-05	6.0E+00	1.4E-05
C5-C8 Aliphatic Fraction	11	1	1.4E-06	4.0E-01	3.5E-06
C9-C10 Aromatic Fraction	26	1	3.2E-06	3.0E-01	1.1E-05
C9-C18 Aliphatic Fraction	68	1	8.5E-06	1.0E+00	8.5E-06
4,4'-DDD	0.0045	1	5.7E-10	5.0E-04	1.1E-06
4,4'-DDE	0.0052	1	6.5E-10	5.0E-04	1.3E-06
4,4'-DDT	0.016	1	2.0E-09	5.0E-04	4.1E-06
alpha-BHC	0.0045	1	5.6E-10	3.0E-03	1.9E-07
beta-BHC	0.0045	1	5.6E-10	3.0E-03	1.9E-07
Dieldrin	0.013	1	1.6E-09	5.0E-05	3.2E-05
Endrin Ketone	0.0046	1	5.8E-10	3.0E-04	1.9E-06
gamma-BHC	0.0045	1	5.6E-10	3.0E-03	1.9E-07
Heptachlor Epoxide	0.0065	1	8.2E-10	1.3E-05	6.3E-05
Hexachlorobenzene	0.0047	1	5.9E-10	1.0E-05	5.9E-05
Methoxychlor	0.0064	1	8.0E-10	5.0E-03	1.6E-07
2,4-D	0.14	0.96	1.7E-08	1.0E-02	1.7E-06
2,4,5-T	0.058	0.96	7.0E-09	1.0E-01	7.0E-08
Dicamba	0.068	1	8.6E-09	3.0E-02	2.9E-07
Aroclor - 1242	0.24	1	3.0E-08	5.0E-05	6.0E-04
Aroclor - 1248	0.23	1	2.9E-08	5.0E-05	5.7E-04
Aroclor - 1254	0.57	1	7.1E-08	5.0E-05	1.4E-03
Aroclor - 1260	3.3	1	4.2E-07	5.0E-05	8.3E-03
Aroclor - 1262	0.22	1	2.8E-08	5.0E-05	5.5E-04
Aroclor - 1268	0.21	1	2.7E-08	5.0E-05	5.4E-04
Antimony	5.0	1	6.2E-07	4.0E-04	1.6E-03
Arsenic	53	0.5	3.3E-06	3.0E-04	1.1E-02
Barium	74	1	9.3E-06	7.0E-02	1.3E-04
Beryllium	0.24	1	3.0E-08	5.0E-03	6.1E-06
Cadmium	1.8	1	2.3E-07	1.0E-03	2.3E-04
Chromium (total)	27	1	3.4E-06	2.0E-02	1.7E-04
Copper	1010	0.7	9.0E-05	3.7E-02	2.4E-03
Cyanide	1.3	1	1.6E-07	6.0E-03	2.7E-05
Iron	81800	0.7	7.3E-03	7.0E-01	1.0E-02
Lead	773	0.3	2.9E-05	7.5E-04	3.9E-02
Mercury	2.7	0.5	1.7E-07	3.0E-04	5.7E-04
Nickel	23	1	2.9E-06	2.0E-02	1.4E-04
Selenium	9.8	1	1.2E-06	5.0E-03	2.5E-04
Silver	1.7	1	2.1E-07	5.0E-03	4.2E-05
Thallium	3.1	1	3.9E-07	8.0E-04	4.9E-04
Vanadium	48	1	6.1E-06	9.0E-03	6.7E-04
Zinc	249	1	3.1E-05	3.0E-01	1.0E-04
				$HI_{soil\text{-}oral}$ =	**8.4E-02**

Notes:

1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when an RAF is otherwise unavailable.

TABLE F-9 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Commercial/Industrial Workers
CANCER EFFECTS

See TABLE F-3 for Exposure Variables and Rationale See TABLE F-2 for Exposure Point Concentration Derivation	Exposure to Dust via Gastrointestinal Tract $LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}c} * C1}{BW * AP_c}$ $ELCR_{soil\text{-}oral} = LADD_{soil\text{-}oral} * CSF$ Total $ELCR_{soil\text{-}oral}$ = S $ELCR_{soil\text{-}oral}$				
COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}c}$ (unitless)	$LADD_{soil\text{-}oral}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	3.25E-12	NA	NC
1,1-Dichloroethane	0.0036	1	3.25E-12	NA	NC
1,2,3-Trichlorobenzene	0.031	1	2.79E-11	NA	NC
1,2,4-Trichlorobenzene	0.33	1	2.95E-10	2.9E-02	8.5E-12
1,2-Dichlorobenzene	0.0095	1	8.57E-12	NA	NC
1,2-Dichloroethane	0.011	1	1.01E-11	9.1E-02	9.1E-13
1,3-Dichlorobenzene	0.0096	1	8.59E-12	NA	NC
1,4-Dichlorobenzene	0.011	1	9.58E-12	2.4E-02	2.3E-13
2-Butanone	0.030	1	2.68E-11	NA	NC
2-Chlorotoluene	0.0032	1	2.90E-12	NA	NC
Acetone	0.090	1	8.05E-11	NA	NC
Benzene	0.0092	1	8.27E-12	5.5E-02	4.5E-13
Carbon Disulfide	0.026	1	2.30E-11	NA	NC
Chlorobenzene	0.0032	1	2.90E-12	NA	NC
Chloroform	0.0064	1	5.74E-12	NA	NC
cis-1,2-Dichloroethene	0.0042	1	3.80E-12	NA	NC
Diethylether	0.0034	1	3.09E-12	NA	NC
Ethylbenzene	0.018	1	1.58E-11	NA	NC
Methylene Chloride	0.017	1	1.49E-11	2.0E-03	3.0E-14
Naphthalene	0.87	1	7.81E-10	NA	NC
Tetrachloroethene	0.0032	1	2.91E-12	2.0E-02	5.8E-14
Toluene	0.016	1	1.40E-11	NA	NC
Trichloroethene	0.011	1	1.03E-11	4.6E-02	4.7E-13
Vinyl Chloride	0.0059	1	5.28E-12	1.4E+00	7.4E-12
Xylene (Total)	0.038	1	3.38E-11	NA	NC
Styrene	0.0043	1	3.87E-12	3.0E-02	1.2E-13
1,2-Dichloropropane	0.0033	1	3.01E-12	6.8E-02	2.0E-13
1,2,3-Trichloropropane	0.0032	1	2.91E-12	3.0E+01	8.7E-11
1,4-Dioxane	0.12	1	1.04E-10	1.0E-01	1.0E-11
2,4-Dimethylphenol	0.67	1	5.98E-10	NA	NC
1-Methylnaphthalene	2.6	1	2.37E-09	2.9E-02	6.9E-11
2-Methylnaphthalene	0.96	1	8.63E-10	NA	NC
2-Methylphenol	0.66	1	5.95E-10	NA	NC
4-Methylphenol	1.5	1	1.38E-09	NA	NC
Acenaphthene	1.2	1	1.07E-09	NA	NC
Acenaphthylene	0.78	1	7.02E-10	NA	NC
Anthracene	1.9	1	1.72E-09	NA	NC
Benzo(a)Anthracene	2.6	0.3	6.93E-10	7.3E-01	5.1E-10
Benzo(a)Pyrene	1.9	0.3	5.06E-10	7.3E+00	3.7E-09
Benzo(e)Pyrene	2.8	1	2.49E-09	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	6.19E-10	7.3E-01	4.5E-10
Benzo(g,h,i)Perylene	1.1	1	9.51E-10	NA	NC
Benzo(k)Fluoranthene	1.5	0.3	4.08E-10	7.3E-02	3.0E-11
Bis(2-Ethylhexyl)phthalate	717	1	6.43E-07	1.4E-02	9.0E-09
Butylbenzylphthalate	0.68	1	6.12E-10	NA	NC
Chrysene	2.2	0.3	5.89E-10	7.3E-02	4.3E-11
Dibenzo(a,h)anthracene	0.54	0.3	1.46E-10	7.3E+00	1.1E-09
Dibenzofuran	1.0	1	9.20E-10	NA	NC
Di-n-butylphthalate	0.66	1	5.96E-10	NA	NC
Fluoranthene	5.4	1	4.85E-09	NA	NC
Fluorene	1.3	1	1.19E-09	NA	NC
Indeno(1,2,3-cd)Pyrene	1.1	0.3	2.95E-10	7.3E-01	2.2E-10
Phenanthrene	5.3	1	4.75E-09	NA	NC
Phenol	0.99	1	8.90E-10	NA	NC
Pyrene	4.2	1	3.79E-09	NA	NC
bis(2-Chloroethoxy)methane	0.67	1	6.02E-10	NA	NC
Pentachlorophenol	2.7	1	2.43E-09	4.0E-01	9.7E-10
3,3-Dichlorobenzidine	1.3	1	1.18E-09	4.5E-01	5.3E-10
C11-C22 Aromatic Fraction	454	1	4.08E-07	NA	NC
C19-C36 Aliphatic Fraction	665	1	5.97E-07	NA	NC
C5-C8 Aliphatic Fraction	11	1	9.90E-09	NA	NC
C9-C10 Aromatic Fraction	26	1	2.31E-08	NA	NC
C9-C18 Aliphatic Fraction	68	1	6.06E-08	NA	NC
4,4'-DDD	0.0045	1	4.07E-12	2.4E-01	9.8E-13
4,4'-DDE	0.0052	1	4.68E-12	3.4E-01	1.6E-12
4,4'-DDT	0.016	1	1.45E-11	3.4E-01	4.9E-12
alpha-BHC	0.0045	1	4.02E-12	6.3E+00	2.5E-11
beta-BHC	0.0045	1	4.03E-12	1.8E+00	7.3E-12
Dieldrin	0.013	1	1.15E-11	1.6E+01	1.8E-10
Endrin Ketone	0.0046	1	4.13E-12	NA	NC
gamma-BHC	0.0045	1	4.02E-12	1.3E+00	5.2E-12
Heptachlor Epoxide	0.0065	1	5.85E-12	9.1E+00	5.3E-11
Hexachlorobenzene	0.0047	1	4.24E-12	1.6E+00	6.8E-12
Methoxychlor	0.0064	1	5.72E-12	NA	NC
2,4-D	0.14	1	1.24E-10	NA	NC
2,4,5-T	0.058	1	5.25E-11	NA	NC
Dicamba	0.068	1	6.15E-11	NA	NC
Aroclor - 1242	0.24	1	2.14E-10	2.0E+00	4.3E-10
Aroclor - 1248	0.23	1	2.05E-10	2.0E+00	4.1E-10
Aroclor - 1254	0.57	1	5.11E-10	2.0E+00	1.0E-09
Aroclor - 1260	3.3	1	2.97E-09	2.0E+00	5.9E-09
Aroclor - 1262	0.22	1	1.98E-10	2.0E+00	4.0E-10
Aroclor - 1268	0.21	1	1.91E-10	2.0E+00	3.8E-10
Antimony	5.0	1	4.46E-09	NA	NC
Arsenic	53	0.5	2.39E-08	1.5E+00	3.6E-08
Barium	74	1	6.65E-08	NA	NC
Beryllium	0.24	1	2.17E-10	NA	NC
Cadmium	1.8	1	1.63E-09	NA	NC
Chromium (total)	27	1	2.44E-08	NA	NC
Copper	1010	1	9.07E-07	NA	NC
Cyanide	1.3	1	1.17E-09	NA	NC
Iron	81800	1	7.34E-05	NA	NC
Lead	773	1	6.94E-07	NA	NC
Mercury	2.7	1	2.45E-09	NA	NC
Nickel	23	1	2.05E-08	NA	NC
Selenium	9.8	1	8.78E-09	NA	NC
Silver	1.7	1	1.49E-09	NA	NC
Thallium	3.1	1	2.81E-09	NA	NC
Vanadium	48	1	4.34E-08	NA	NC
Zinc	249	1	2.23E-07	NA	NC
				Total $ELCR_{soil\text{-}oral}$:	**6.1E-08**

DRAFT

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when an RAF is otherwise unavailable.

TABLE F-10
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Commercial/Industrial Workers
SUBCHRONIC NON-CANCER EFFECTS

See TABLE F-3 for Exposure Variables and Rationale. See TABLE F-2 for Exposure Point Concentration Derivation

Inhalation of Soil-derived Fugitive Dust

$$ADE_{dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}}$$

$$HQ_{dust} = \frac{ADE_{dust}}{RfC} \qquad HI_{dust} = S\ HQ_{dust}$$

DRAFT

COC	EPC_{dust} EPC2 (mg/m^3)	ADE_{dust} (mg/m^3)	RfC SubChronic (mg/m^3)	HQ_{dust} (unitless)
1,1,1-Trichloroethane	5.1E-09	9.7E-10	5.0E+00	1.9E-10
1,1-Dichloroethane	5.1E-09	9.7E-10	8.0E+00	1.2E-10
1,2,3-Trichlorobenzene	4.4E-08	8.3E-09	2.0E-02	4.1E-07
1,2,4-Trichlorobenzene	4.6E-07	8.7E-08	2.0E-02	4.4E-06
1,2-Dichlorobenzene	1.3E-08	2.5E-09	2.4E+00	1.1E-09
1,2-Dichloroethane	1.6E-08	3.0E-09	7.0E-02	4.3E-08
1,3-Dichlorobenzene	1.3E-08	2.6E-09	2.4E+00	1.1E-09
1,4-Dichlorobenzene	1.5E-08	2.8E-09	2.4E+00	1.2E-09
2-Butanone	4.2E-08	8.0E-09	5.0E+00	1.6E-09
2-Chlorotoluene	4.5E-09	8.6E-10	8.0E-01	1.1E-09
Acetone	1.3E-07	2.4E-08	8.0E-01	3.0E-08
Benzene	1.3E-08	2.5E-09	1.0E-02	2.5E-07
Carbon Disulfide	3.6E-08	6.8E-09	7.0E-01	9.8E-09
Chlorobenzene	4.5E-09	8.6E-10	5.0E-01	1.7E-09
Chloroform	8.9E-09	1.7E-09	6.6E-01	2.6E-09
cis-1,2-Dichloroethene	5.9E-09	1.1E-09	6.0E-02	1.9E-08
Diethylether	4.8E-09	9.2E-10	1.6E+00	5.7E-10
Ethylbenzene	2.5E-08	4.7E-09	9.0E+00	5.2E-10
Methylene Chloride	2.3E-08	4.4E-09	6.0E-01	7.4E-09
Naphthalene	1.2E-06	2.3E-07	3.0E-03	7.7E-05
Tetrachloroethene	4.5E-09	8.7E-10	4.0E-02	2.2E-08
Toluene	2.2E-08	4.1E-09	5.0E+00	8.3E-10
Trichloroethene	1.6E-08	3.1E-09	2.0E-03	1.5E-06
Vinyl Chloride	8.2E-09	1.6E-09	1.0E-01	1.6E-08
Xylene (Total)	5.3E-08	1.0E-08	4.0E-01	2.5E-08
Styrene	6.0E-09	1.2E-09	3.0E+00	3.8E-10
1,2-Dichloropropane	4.7E-09	8.9E-10	1.2E-02	7.4E-08
1,2,3-Trichloropropane	4.5E-09	8.7E-10	3.0E-04	2.9E-06
1,4-Dioxane	1.6E-07	3.1E-08	3.0E-02	1.0E-06
2,4-Dimethylphenol	9.3E-07	1.8E-07	2.0E-01	8.9E-07
1-Methylnaphthalene	3.7E-06	7.0E-07	5.0E-01	1.4E-06
2-Methylnaphthalene	1.3E-06	2.6E-07	5.0E-01	5.1E-07
2-Methylphenol	9.3E-07	1.8E-07	1.8E-01	1.0E-06
4-Methylphenol	2.1E-06	4.1E-07	1.2E-01	3.4E-06
Acenaphthene	1.7E-06	3.2E-07	5.0E-01	6.4E-07
Acenaphthylene	1.1E-06	2.1E-07	5.0E-01	4.2E-07
Anthracene	2.7E-06	5.1E-07	5.0E-01	1.0E-06
Benzo(a)Anthracene	3.6E-06	6.9E-07	5.0E-01	1.4E-06
Benzo(a)Pyrene	2.6E-06	5.0E-07	5.0E-01	1.0E-06
Benzo(e)Pyrene	3.9E-06	7.4E-07	NA	NC
Benzo(b)Fluoranthene	3.2E-06	6.1E-07	5.0E-01	1.2E-06
Benzo(g,h,i)Perylene	1.5E-06	2.8E-07	5.0E-01	5.6E-07
Benzo(k)Fluoranthene	2.1E-06	4.0E-07	5.0E-01	8.1E-07
Bis(2-Ethylhexyl)phthalate	1.0E-03	1.9E-04	7.0E-03	2.7E-02
Butylbenzylphthalate	9.5E-07	1.8E-07	NA	NC
Chrysene	3.1E-06	5.8E-07	5.0E-01	1.2E-06
Dibenzo(a,h)anthracene	7.6E-07	1.4E-07	5.0E-01	2.9E-07
Dibenzofuran	1.4E-06	2.7E-07	NA	NC
Di-n-butylphthalate	9.3E-07	1.8E-07	NA	NC
Fluoranthene	7.6E-06	1.4E-06	5.0E-01	2.9E-06
Fluorene	1.8E-06	3.5E-07	5.0E-01	7.0E-07
Indeno(1,2,3-cd)Pyrene	1.5E-06	2.9E-07	5.0E-01	5.8E-07
Phenanthrene	7.4E-06	1.4E-06	5.0E-01	2.8E-06
Phenol	1.4E-06	2.6E-07	2.6E-01	1.0E-06
Pyrene	5.9E-06	1.1E-06	5.0E-01	2.3E-06
bis(2-Chloroethoxy)methane	9.4E-07	1.8E-07	NA	NC
Pentachlorophenol	3.8E-06	7.2E-07	7.0E-05	1.0E-02
3,3-Dichlorobenzidine	1.8E-06	3.5E-07	NA	NC
C11-C22 Aromatic Fraction	6.4E-04	1.2E-04	5.0E-01	2.4E-04
C19-C36 Aliphatic Fraction	9.3E-04	1.8E-04	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	2.9E-06	2.0E-01	1.5E-05
C9-C10 Aromatic Fraction	3.6E-05	6.9E-06	5.0E-01	1.4E-05
C9-C18 Aliphatic Fraction	9.5E-05	1.8E-05	6.0E-01	3.0E-05
4,4'-DDD	6.3E-09	1.2E-09	1.8E-03	6.9E-07
4,4'-DDE	7.3E-09	1.4E-09	1.8E-03	7.9E-07
4,4'-DDT	2.3E-08	4.3E-09	1.8E-03	2.5E-06
alpha-BHC	6.3E-09	1.2E-09	1.1E-03	1.1E-06
beta-BHC	6.3E-09	1.2E-09	1.1E-03	1.1E-06
Dieldrin	1.8E-08	3.4E-09	1.8E-04	1.9E-05
Endrin Ketone	6.4E-09	1.2E-09	1.1E-03	1.1E-06
gamma-BHC	6.3E-09	1.2E-09	1.1E-02	1.1E-07
Heptachlor Epoxide	9.1E-09	1.7E-09	4.6E-05	3.8E-05
Hexachlorobenzene	6.6E-09	1.3E-09	4.0E-05	3.1E-05
Methoxychlor	8.9E-09	1.7E-09	1.8E-02	9.4E-08
2,4-D	1.9E-07	3.7E-08	NA	NC
2,4,5-T	8.2E-08	1.6E-08	NA	NC
Dicamba	9.6E-08	1.8E-08	NA	NC
Aroclor - 1242	3.3E-07	6.3E-08	2.0E-05	3.2E-03
Aroclor - 1248	3.2E-07	6.1E-08	2.0E-05	3.0E-03
Aroclor - 1254	8.0E-07	1.5E-07	2.0E-05	7.6E-03
Aroclor - 1260	4.6E-06	8.8E-07	2.0E-05	4.4E-02
Aroclor - 1262	3.1E-07	5.9E-08	2.0E-05	2.9E-03
Aroclor - 1268	3.0E-07	5.7E-08	2.0E-05	2.8E-03
Antimony	7.0E-06	1.3E-06	1.0E-02	1.3E-04
Arsenic	7.5E-05	1.4E-05	2.0E-05	7.1E-01
Barium	1.0E-04	2.0E-05	5.0E-03	3.9E-03
Beryllium	3.4E-07	6.4E-08	2.0E-05	3.2E-03
Cadmium	2.5E-06	4.8E-07	2.0E-05	2.4E-02
Chromium (total)	3.8E-05	7.2E-06	3.0E-04	2.4E-02
Copper	1.4E-03	2.7E-04	3.0E-03	9.0E-02
Cyanide	1.8E-06	3.5E-07	3.0E-03	1.2E-04
Iron	1.1E-01	2.2E-02	NA	NC
Lead	1.1E-03	2.1E-04	1.0E-03	2.1E-01
Mercury	3.8E-06	7.3E-07	3.0E-04	2.4E-03
Nickel	3.2E-05	6.1E-06	1.0E-03	6.1E-03
Selenium	1.4E-05	2.6E-06	3.0E-03	8.7E-04
Silver	2.3E-06	4.4E-07	1.4E-04	3.2E-03
Thallium	4.4E-06	8.3E-07	1.4E-05	6.0E-02
Vanadium	6.8E-05	1.3E-05	1.0E-03	1.3E-02
Zinc	3.5E-04	6.6E-05	1.4E-03	4.7E-02
			HI_{dust}:	**1E+00**

Notes:

1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

TABLE F-10 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST

1 Horizon Way
[illegible] Massachusetts

RECEPTOR: Commercial/Industrial Workers
CANCER EFFECTS

See TABLE F-3 for Exposure Variables and Rationale and TABLE F-2 for Exposure Point Concentration Derivation

Inhalation of Soil-derived Fugitive Dust

$$LADE_{dust} = \frac{EPC_{dust} * EF * ED * EP * C2 * C3}{AP_c}$$

$ELCR_{dust} = LADE_{dust} * UR$ Total $ELCR_{dust}$ = S $ELCR_{dust}$

COC	EPC_{dust} EPC2 (mg/m^3)	$LADE_{dust}$ (µg/m^3)	UR (µg/m^3)$^{-1}$	$ELCR_{dust}$ (unitless)
1,1,1-Trichloroethane	5.1E-09	6.9E-09	NA	NC
1,1-Dichloroethane	5.1E-09	6.9E-09	1.6E-06	1.1E-14
1,2,3-Trichlorobenzene	4.4E-08	5.9E-08	NA	NC
1,2,4-Trichlorobenzene	4.6E-07	6.2E-07	NA	NC
1,2-Dichlorobenzene	1.3E-08	1.8E-08	NA	NC
1,2-Dichloroethane	1.6E-08	2.1E-08	2.6E-05	5.5E-13
1,3-Dichlorobenzene	1.3E-08	1.8E-08	NA	NC
1,4-Dichlorobenzene	1.5E-08	2.0E-08	6.9E-06	1.4E-13
2-Butanone	4.2E-08	5.7E-08	NA	NC
2-Chlorotoluene	4.5E-09	6.2E-09	NA	NC
Acetone	1.3E-07	1.7E-07	NA	NC
Benzene	1.3E-08	1.8E-08	7.8E-06	1.4E-13
Carbon Disulfide	3.6E-08	4.9E-08	NA	NC
Chlorobenzene	4.5E-09	6.2E-09	NA	NC
Chloroform	8.9E-09	1.2E-08	2.3E-05	2.8E-13
cis-1,2-Dichloroethene	5.9E-09	8.1E-09	NA	NC
Diethylether	4.8E-09	6.5E-09	NA	NC
Ethylbenzene	2.5E-08	3.4E-08	NA	NC
Methylene Chloride	2.3E-08	3.2E-08	1.0E-08	3.2E-16
Naphthalene	1.2E-06	1.7E-06	NA	NC
Tetrachloroethene	4.5E-09	6.2E-09	3.0E-06	1.9E-14
Toluene	2.2E-08	3.0E-08	NA	NC
Trichloroethene	1.6E-08	2.2E-08	5.0E-06	1.1E-13
Vinyl Chloride	8.2E-09	1.1E-08	8.8E-06	9.9E-14
Xylene (Total)	5.3E-08	7.2E-08	NA	NC
Styrene	6.0E-09	8.2E-09	5.7E-07	4.7E-15
1,2-Dichloropropane	4.7E-09	6.4E-09	1.9E-05	1.2E-13
1,2,3-Trichloropropane	4.5E-09	6.2E-09	NA	NC
1,4-Dioxane	1.6E-07	2.2E-07	5.0E-06	1.1E-12
2,4-Dimethylphenol	9.3E-07	1.3E-06	NA	NC
1-Methylnaphthalene	3.7E-06	5.0E-06	NA	NC
2-Methylnaphthalene	1.3E-06	1.8E-06	NA	NC
2-Methylphenol	9.3E-07	1.3E-06	NA	NC
4-Methylphenol	2.1E-06	2.9E-06	NA	NC
Acenaphthene	1.7E-06	2.3E-06	NA	NC
Acenaphthylene	1.1E-06	1.5E-06	NA	NC
Anthracene	2.7E-06	3.6E-06	NA	NC
Benzo(a)Anthracene	3.6E-06	4.9E-06	2.1E-04	1.0E-09
Benzo(a)Pyrene	2.6E-06	3.6E-06	2.1E-03	7.5E-09
Benzo(e)Pyrene	3.9E-06	5.3E-06	NA	NC
Benzo(b)Fluoranthene	3.2E-06	4.4E-06	2.1E-04	9.1E-10
Benzo(g,h,i)Perylene	1.5E-06	2.0E-06	NA	NC
Benzo(k)Fluoranthene	2.1E-06	2.9E-06	2.1E-05	6.0E-11
Bis(2-Ethylhexyl)phthalate	1.0E-03	1.4E-03	1.3E-06	1.8E-09
Butylbenzylphthalate	9.5E-07	1.3E-06	NA	NC
Chrysene	3.1E-06	4.2E-06	2.1E-05	8.7E-11
Dibenzo(a,h)anthracene	7.6E-07	1.0E-06	2.1E-03	2.2E-09
Dibenzofuran	1.4E-06	2.0E-06	NA	NC
Di-n-butylphthalate	9.3E-07	1.3E-06	NA	NC
Fluoranthene	7.6E-06	1.0E-05	NA	NC
Fluorene	1.8E-06	2.5E-06	NA	NC
Indeno(1,2,3-cd)Pyrene	1.5E-06	2.1E-06	2.1E-04	4.4E-10
Phenanthrene	7.4E-06	1.0E-05	NA	NC
Phenol	1.4E-06	1.9E-06	NA	NC
Pyrene	5.9E-06	8.1E-06	NA	NC
bis(2-Chloroethoxy)methane	9.4E-07	1.3E-06	NA	NC
Pentachlorophenol	3.8E-06	5.2E-06	1.0E-04	5.2E-10
3,3-Dichlorobenzidine	1.8E-06	2.5E-06	1.3E-04	3.2E-10
C11-C22 Aromatic Fraction	6.4E-04	8.7E-04	NA	NC
C19-C36 Aliphatic Fraction	9.3E-04	1.3E-03	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	2.1E-05	NA	NC
C9-C10 Aromatic Fraction	3.6E-05	4.9E-05	NA	NC
C9-C18 Aliphatic Fraction	9.5E-05	1.3E-04	NA	NC
4,4'-DDD	6.3E-09	8.6E-09	6.9E-05	5.9E-13
4,4'-DDE	7.3E-09	9.9E-09	9.7E-05	9.6E-13
4,4'-DDT	2.3E-08	3.1E-08	9.7E-05	3.0E-12
alpha-BHC	6.3E-09	8.5E-09	1.8E-03	1.5E-11
beta-BHC	6.3E-09	8.5E-09	5.3E-04	4.5E-12
Dieldrin	1.8E-08	2.4E-08	4.6E-03	1.1E-10
Endrin Ketone	6.4E-09	8.8E-09	NA	NC
gamma-BHC	6.3E-09	8.5E-09	3.7E-04	3.2E-12
Heptachlor Epoxide	9.1E-09	1.2E-08	2.6E-03	3.2E-11
Hexachlorobenzene	6.6E-09	9.0E-09	4.6E-04	4.1E-12
Methoxychlor	8.9E-09	1.2E-08	NA	NC
2,4-D	1.9E-07	2.6E-07	NA	NC
2,4,5-T	8.2E-08	1.1E-07	NA	NC
Dicamba	9.6E-08	1.3E-07	NA	NC
Aroclor - 1242	3.3E-07	4.5E-07	1.0E-04	4.5E-11
Aroclor - 1248	3.2E-07	4.4E-07	1.0E-04	4.4E-11
Aroclor - 1254	8.0E-07	1.1E-06	1.0E-04	1.1E-10
Aroclor - 1260	4.6E-06	6.3E-06	1.0E-04	6.3E-10
Aroclor - 1262	3.1E-07	4.2E-07	1.0E-04	4.2E-11
Aroclor - 1268	3.0E-07	4.1E-07	1.0E-04	4.1E-11
Antimony	7.0E-06	9.5E-06	NA	NC
Arsenic	7.5E-05	1.0E-04	3.0E-03	3.0E-07
Barium	1.0E-04	1.4E-04	NA	NC
Beryllium	3.4E-07	4.6E-07	2.4E-03	1.1E-09
Cadmium	2.5E-06	3.5E-06	1.8E-03	6.2E-09
Chromium (total)	3.8E-05	5.2E-05	1.2E-02	6.2E-07
Copper	1.4E-03	1.9E-03	NA	NC
Cyanide	1.8E-06	2.5E-06	NA	NC
Iron	1.1E-01	1.6E-01	NA	NC
Lead	1.1E-03	1.5E-03	NA	NC
Mercury	3.8E-06	5.2E-06	NA	NC
Nickel	3.2E-05	4.4E-05	4.8E-04	2.1E-08
Selenium	1.4E-05	1.9E-05	NA	NC
Silver	2.3E-06	3.2E-06	NA	NC
Thallium	4.4E-06	6.0E-06	NA	NC
Vanadium	6.8E-05	9.2E-05	NA	NC
Zinc	3.5E-04	4.7E-04	NA	NC
			Total $ELCR_{dust}$:	**9.7E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE F-11
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES
FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Young Child, age 1<2)
SUBCHRONIC NON-CANCER EFFECTS

DRAFT

See TABLE F-4 for Exposure Variables and Rationale See TABLE F-2 for Exposure Point Concentration Derivation	Exposure to Dust via Gastrointestinal Tract $ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}}$ $HQ_{soil\text{-}oral} = \frac{ADD_{soil\text{-}oral}}{RfD}$ $HI_{soil\text{-}oral} =$ S $HQ_{soil\text{-}oral}$				
COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{soil\text{-}oral}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	7.3E-11	7.0E+00	1.0E-11
1,1-Dichloroethane	0.0036	1	7.3E-11	2.0E+00	3.7E-11
1,2,3-Trichlorobenzene	0.031	1	6.3E-10	8.0E-03	7.8E-08
1,2,4-Trichlorobenzene	0.33	1	6.6E-09	9.0E-02	7.4E-08
1,2-Dichlorobenzene	0.0095	1	1.9E-10	9.0E-01	2.1E-10
1,2-Dichloroethane	0.011	1	2.3E-10	2.0E-02	1.1E-08
1,3-Dichlorobenzene	0.0096	1	1.9E-10	9.0E-01	2.1E-10
1,4-Dichlorobenzene	0.011	1	2.2E-10	9.0E-01	2.4E-10
2-Butanone	0.030	1	6.0E-10	6.0E-01	1.0E-09
2-Chlorotoluene	0.0032	1	6.5E-11	2.0E-01	3.3E-10
Acetone	0.090	1	1.8E-09	2.7E+00	6.7E-10
Benzene	0.0092	1	1.9E-10	1.0E-02	1.9E-08
Carbon Disulfide	0.026	1	5.2E-10	1.0E-01	5.2E-09
Chlorobenzene	0.0032	1	6.5E-11	7.0E-02	9.3E-10
Chloroform	0.0064	1	1.3E-10	1.0E-02	1.3E-08
cis-1,2-Dichloroethene	0.0042	1	8.6E-11	2.0E-02	4.3E-09
Diethylether	0.0034	1	6.9E-11	2.0E+00	3.5E-11
Ethylbenzene	0.018	1	3.6E-10	5.0E-02	7.1E-09
Methylene Chloride	0.017	1	3.3E-10	6.0E-03	5.6E-08
Naphthalene	0.87	0.3	5.3E-09	2.0E-01	2.6E-08
Tetrachloroethene	0.0032	1	6.6E-11	6.0E-03	1.1E-08
Toluene	0.016	1	3.1E-10	8.0E-01	3.9E-10
Trichloroethene	0.011	1	2.3E-10	5.0E-04	4.6E-07
Vinyl Chloride	0.0059	1	1.2E-10	3.0E-03	4.0E-08
Xylene (Total)	0.038	1	7.6E-10	4.0E-01	1.9E-09
Styrene	0.0043	1	8.7E-11	2.0E+00	4.4E-11
1,2-Dichloropropane	0.0033	1	6.8E-11	NA	NC
1,2,3-Trichloropropane	0.0032	1	6.5E-11	8.0E-02	8.2E-10
1,4-Dioxane	0.12	1	2.3E-09	3.0E-02	7.8E-08
2,4-Dimethylphenol	0.67	1	1.3E-08	5.0E-02	2.7E-07
1-Methylnaphthalene	2.6	0.3	1.6E-08	7.0E-03	2.3E-06
2-Methylnaphthalene	0.96	0.3	5.8E-09	4.0E-03	1.5E-06
2-Methylphenol	0.66	1	1.3E-08	5.0E-01	2.7E-08
4-Methylphenol	1.5	1	3.1E-08	5.0E-03	6.2E-06
Acenaphthene	1.2	0.3	7.2E-09	2.0E-01	3.6E-08
Acenaphthylene	0.78	0.3	4.7E-09	3.0E-01	1.6E-08
Anthracene	1.9	0.3	1.2E-08	1.0E+00	1.2E-08
Benzo(a)Anthracene	2.6	0.3	1.6E-08	3.0E-01	5.2E-08
Benzo(a)Pyrene	1.9	0.3	1.1E-08	3.0E-01	3.8E-08
Benzo(e)Pyrene	2.8	1	5.6E-08	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	1.4E-08	3.0E-01	4.6E-08
Benzo(g,h,i)Perylene	1.1	0.3	6.4E-09	3.0E-01	2.1E-08
Benzo(k)Fluoranthene	1.5	0.3	9.2E-09	3.0E-01	3.1E-08
Bis(2-Ethylhexyl)phthalate	717	1	1.4E-05	2.0E-02	7.2E-04
Butylbenzylphthalate	0.68	0.96	1.3E-08	2.0E+00	6.6E-09
Chrysene	2.2	0.3	1.3E-08	3.0E-01	4.4E-08
Dibenzo(a,h)anthracene	0.54	0.3	3.3E-09	3.0E-01	1.1E-08
Dibenzofuran	1.0	1	2.1E-08	4.0E-03	5.2E-06
Di-n-butylphthalate	0.66	0.96	1.3E-08	1.0E+00	1.3E-08
Fluoranthene	5.4	0.3	3.3E-08	4.0E-01	8.2E-08
Fluorene	1.3	0.3	8.0E-09	4.0E-01	2.0E-08
Indeno(1,2,3-cd)Pyrene	1.1	0.3	6.6E-09	3.0E-01	2.2E-08
Phenanthrene	5.3	0.3	3.2E-08	3.0E-01	1.1E-07
Phenol	0.99	1	2.0E-08	3.0E-01	6.7E-08
Pyrene	4.2	0.3	2.6E-08	3.0E-01	8.5E-08
bis(2-Chloroethoxy)methane	0.67	1	1.4E-08	3.0E-02	4.5E-07
Pentachlorophenol	2.7	1	5.5E-08	5.0E-03	1.1E-05
3,3-Dichlorobenzidine	1.3	1	2.6E-08	NA	NC
C11-C22 Aromatic Fraction	454	0.3	2.8E-06	3.0E-01	9.2E-06
C19-C36 Aliphatic Fraction	665	1	1.3E-05	6.0E+00	2.2E-06
C5-C8 Aliphatic Fraction	11	1	2.2E-07	4.0E-01	5.6E-07
C9-C10 Aromatic Fraction	26	1	5.2E-07	3.0E-01	1.7E-06
C9-C18 Aliphatic Fraction	68	1	1.4E-06	1.0E+00	1.4E-06
4,4'-DDD	0.0045	1	9.1E-11	5.0E-04	1.8E-07
4,4'-DDE	0.0052	1	1.1E-10	5.0E-04	2.1E-07
4,4'-DDT	0.016	1	3.3E-10	5.0E-04	6.5E-07
alpha-BHC	0.0045	1	9.0E-11	3.0E-03	3.0E-08
beta-BHC	0.0045	1	9.1E-11	3.0E-03	3.0E-08
Dieldrin	0.013	1	2.6E-10	5.0E-05	5.2E-06
Endrin Ketone	0.0046	1	9.3E-11	3.0E-04	3.1E-07
gamma-BHC	0.0045	1	9.0E-11	3.0E-03	3.0E-08
Heptachlor Epoxide	0.0065	1	1.3E-10	1.3E-05	1.0E-05
Hexachlorobenzene	0.0047	1	9.5E-11	1.0E-05	9.5E-06
Methoxychlor	0.0064	1	1.3E-10	5.0E-03	2.6E-08
2,4-D	0.14	0.96	2.7E-09	1.0E-02	2.7E-07
2,4,5-T	0.058	0.96	1.1E-09	1.0E-01	1.1E-08
Dicamba	0.068	1	1.4E-09	3.0E-02	4.6E-08
Aroclor - 1242	0.24	1	4.8E-09	5.0E-05	9.6E-05
Aroclor - 1248	0.23	1	4.6E-09	5.0E-05	9.2E-05
Aroclor - 1254	0.57	1	1.1E-08	5.0E-05	2.3E-04
Aroclor - 1260	3.3	1	6.7E-08	5.0E-05	1.3E-03
Aroclor - 1262	0.22	1	4.5E-09	5.0E-05	8.9E-05
Aroclor - 1268	0.21	1	4.3E-09	5.0E-05	8.6E-05
Antimony	5.0	1	1.0E-07	4.0E-04	2.5E-04
Arsenic	53	0.5	5.4E-07	3.0E-04	1.8E-03
Barium	74	1	1.5E-06	7.0E-02	2.1E-05
Beryllium	0.24	1	4.9E-09	5.0E-03	9.8E-07
Cadmium	1.8	1	3.7E-08	1.0E-03	3.7E-05
Chromium (total)	27	1	5.5E-07	2.0E-02	2.7E-05
Copper	1010	0.7	1.4E-05	3.7E-02	3.9E-04
Cyanide	1.3	1	2.6E-08	6.0E-03	4.4E-06
Iron	81800	0.7	1.2E-03	7.0E-01	1.7E-03
Lead	773	0.3	4.7E-06	7.5E-04	6.2E-03
Mercury	2.7	0.5	2.8E-08	3.0E-04	9.2E-05
Nickel	23	1	4.6E-07	2.0E-02	2.3E-05
Selenium	9.8	1	2.0E-07	5.0E-03	3.9E-05
Silver	1.7	1	3.4E-08	5.0E-03	6.7E-06
Thallium	3.1	1	6.3E-08	8.0E-04	7.9E-05
Vanadium	48	1	9.7E-07	9.0E-03	1.1E-04
Zinc	249	1	5.0E-06	3.0E-01	1.7E-05
				$HI_{oral} =$	**1.4E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

TABLE F-11 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES
FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Child, age 7<8)
SUBCHRONIC NON-CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale

See TABLE F-2 for Exposure Point Concentration Derivation

Exposure to Dust via Gastrointestinal Tract

$$ADD_{soil-oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral-nc} * C1}{BW * AP_{nc}}$$

$$HQ_{soil-oral} = \frac{ADD_{soil-oral}}{RfD} \qquad HI_{soil-oral} = S\ HQ_{soil-oral}$$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral-nc}$ (unitless)	$ADD_{soil-oral}$ (mg/kg-day)	RfD SubChronic (mg/kg-day)	$HQ_{soil-oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	3.1E-10	7.0E+00	4.5E-11
1,1-Dichloroethane	0.0036	1	3.1E-10	2.0E+00	1.6E-10
1,2,3-Trichlorobenzene	0.031	1	2.7E-09	8.0E-03	3.4E-07
1,2,4-Trichlorobenzene	0.33	1	2.8E-08	9.0E-02	3.1E-07
1,2-Dichlorobenzene	0.0095	1	8.2E-10	9.0E-01	9.1E-10
1,2-Dichloroethane	0.011	1	9.6E-10	2.0E-02	4.8E-08
1,3-Dichlorobenzene	0.0096	1	8.2E-10	9.0E-01	9.2E-10
1,4-Dichlorobenzene	0.011	1	9.2E-10	9.0E-01	1.0E-09
2-Butanone	0.030	1	2.6E-09	6.0E-01	4.3E-09
2-Chlorotoluene	0.0032	1	2.8E-10	2.0E-01	1.4E-09
Acetone	0.090	1	7.7E-09	2.7E+00	2.9E-09
Benzene	0.0092	1	7.9E-10	1.0E-02	7.9E-08
Carbon Disulfide	0.026	1	2.2E-09	1.0E-01	2.2E-08
Chlorobenzene	0.0032	1	2.8E-10	7.0E-02	4.0E-09
Chloroform	0.0064	1	5.5E-10	1.0E-02	5.5E-08
cis-1,2-Dichloroethene	0.0042	1	3.7E-10	2.0E-02	1.8E-08
Diethylether	0.0034	1	3.0E-10	2.0E+00	1.5E-10
Ethylbenzene	0.018	1	1.5E-09	5.0E-02	3.0E-08
Methylene Chloride	0.017	1	1.4E-09	6.0E-03	2.4E-07
Naphthalene	0.87	0.3	2.3E-08	2.0E-01	1.1E-07
Tetrachloroethene	0.0032	1	2.8E-10	6.0E-03	4.7E-08
Toluene	0.016	1	1.3E-09	8.0E-01	1.7E-09
Trichloroethene	0.011	1	9.9E-10	5.0E-04	2.0E-06
Vinyl Chloride	0.0059	1	5.1E-10	3.0E-03	1.7E-07
Xylene (Total)	0.038	1	3.2E-09	4.0E-01	8.1E-09
Styrene	0.0043	1	3.7E-10	2.0E+00	1.9E-10
1,2-Dichloropropane	0.0033	1	2.9E-10	NA	NC
1,2,3-Trichloropropane	0.0032	1	2.8E-10	8.0E-02	3.5E-09
1,4-Dioxane	0.12	1	1.0E-08	3.0E-02	3.3E-07
2,4-Dimethylphenol	0.67	1	5.7E-08	5.0E-02	1.1E-06
1-Methylnaphthalene	2.6	0.3	6.8E-08	7.0E-03	9.8E-06
2-Methylnaphthalene	0.96	0.3	2.5E-08	4.0E-03	6.2E-06
2-Methylphenol	0.66	1	5.7E-08	5.0E-01	1.1E-07
4-Methylphenol	1.5	1	1.3E-07	5.0E-03	2.6E-05
Acenaphthene	1.2	0.3	3.1E-08	2.0E-01	1.5E-07
Acenaphthylene	0.78	0.3	2.0E-08	3.0E-01	6.7E-08
Anthracene	1.9	0.3	5.0E-08	1.0E+00	5.0E-08
Benzo(a)Anthracene	2.6	0.3	6.7E-08	3.0E-01	2.2E-07
Benzo(a)Pyrene	1.9	0.3	4.9E-08	3.0E-01	1.6E-07
Benzo(e)Pyrene	2.8	1	2.4E-07	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	5.9E-08	3.0E-01	2.0E-07
Benzo(g,h,i)Perylene	1.1	0.3	2.7E-08	3.0E-01	9.1E-08
Benzo(k)Fluoranthene	1.5	0.3	3.9E-08	3.0E-01	1.3E-07
Bis(2-Ethylhexyl)phthalate	717	1	6.2E-05	2.0E-02	3.1E-03
Butylbenzylphthalate	0.68	0.96	5.6E-08	2.0E+00	2.8E-08
Chrysene	2.2	0.3	5.7E-08	3.0E-01	1.9E-07
Dibenzo(a,h)anthracene	0.54	0.3	1.4E-08	3.0E-01	4.7E-08
Dibenzofuran	1.0	1	8.8E-08	4.0E-03	2.2E-05
Di-n-butylphthalate	0.66	0.96	5.5E-08	1.0E+00	5.5E-08
Fluoranthene	5.4	0.3	1.4E-07	4.0E-01	3.5E-07
Fluorene	1.3	0.3	3.4E-08	4.0E-01	8.5E-08
Indeno(1,2,3-cd)Pyrene	1.1	0.3	2.8E-08	3.0E-01	9.4E-08
Phenanthrene	5.3	0.3	1.4E-07	3.0E-01	4.6E-07
Phenol	0.99	1	8.5E-08	3.0E-01	2.8E-07
Pyrene	4.2	0.3	1.1E-07	3.0E-01	3.6E-07
bis(2-Chloroethoxy)methane	0.67	1	5.8E-08	3.0E-02	1.9E-06
Pentachlorophenol	2.7	1	2.3E-07	5.0E-03	4.7E-05
3,3-Dichlorobenzidine	1.3	1	1.1E-07	NA	NC
C11-C22 Aromatic Fraction	454	0.3	1.2E-05	3.0E-01	3.9E-05
C19-C36 Aliphatic Fraction	665	1	5.7E-05	6.0E+00	9.5E-06
C5-C8 Aliphatic Fraction	11	1	9.5E-07	4.0E-01	2.4E-06
C9-C10 Aromatic Fraction	26	1	2.2E-06	3.0E-01	7.4E-06
C9-C18 Aliphatic Fraction	68	1	5.8E-06	1.0E+00	5.8E-06
4,4'-DDD	0.0045	1	3.9E-10	5.0E-04	7.8E-07
4,4'-DDE	0.0052	1	4.5E-10	5.0E-04	9.0E-07
4,4'-DDT	0.016	1	1.4E-09	5.0E-04	2.8E-06
alpha-BHC	0.0045	1	3.9E-10	3.0E-03	1.3E-07
beta-BHC	0.0045	1	3.9E-10	3.0E-03	1.3E-07
Dieldrin	0.013	1	1.1E-09	5.0E-05	2.2E-05
Endrin Ketone	0.0046	1	4.0E-10	3.0E-04	1.3E-06
gamma-BHC	0.0045	1	3.9E-10	3.0E-03	1.3E-07
Heptachlor Epoxide	0.0065	1	5.6E-10	1.3E-05	4.3E-05
Hexachlorobenzene	0.0047	1	4.1E-10	1.0E-05	4.1E-05
Methoxychlor	0.0064	1	5.5E-10	5.0E-03	1.1E-07
2,4-D	0.14	0.96	1.1E-08	1.0E-02	1.1E-06
2,4,5-T	0.058	0.96	4.8E-09	1.0E-01	4.8E-08
Dicamba	0.068	1	5.9E-09	3.0E-02	2.0E-07
Aroclor - 1242	0.24	1	2.1E-08	5.0E-05	4.1E-04
Aroclor - 1248	0.23	1	2.0E-08	5.0E-05	3.9E-04
Aroclor - 1254	0.57	1	4.9E-08	5.0E-05	9.8E-04
Aroclor - 1260	3.3	1	2.9E-07	5.0E-05	5.7E-03
Aroclor - 1262	0.22	1	1.9E-08	5.0E-05	3.8E-04
Aroclor - 1268	0.21	1	1.8E-08	5.0E-05	3.7E-04
Antimony	5.0	1	4.3E-07	4.0E-04	1.1E-03
Arsenic	53	0.5	2.3E-06	3.0E-04	7.6E-03
Barium	74	1	6.4E-06	7.0E-02	9.1E-05
Beryllium	0.24	1	2.1E-08	5.0E-03	4.2E-06
Cadmium	1.8	1	1.6E-07	1.0E-03	1.6E-04
Chromium (total)	27	1	2.3E-06	2.0E-02	1.2E-04
Copper	1010	0.7	6.2E-05	3.7E-02	1.7E-03
Cyanide	1.3	1	1.1E-07	6.0E-03	1.9E-05
Iron	81800	0.7	5.0E-03	7.0E-01	7.1E-03
Lead	773	0.3	2.0E-05	7.5E-04	2.7E-02
Mercury	2.7	0.5	1.2E-07	3.0E-04	3.9E-04
Nickel	23	1	2.0E-06	2.0E-02	9.8E-05
Selenium	9.8	1	8.4E-07	5.0E-03	1.7E-04
Silver	1.7	1	1.4E-07	5.0E-03	2.9E-05
Thallium	3.1	1	2.7E-07	8.0E-04	3.4E-04
Vanadium	48	1	4.2E-06	9.0E-03	4.6E-04
Zinc	249	1	2.1E-05	3.0E-01	7.1E-05
				HI_{oral} =	**5.8E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

QA: CL Date: 2/3/16

DRAFT

TABLE F-11 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Adut, age 65)
SUBCHRONIC NON-CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale See TABLE F-2 for Exposure Point Concentration Derivation	Exposure to Dust via Gastrointestinal Tract $ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}}$ $HQ_{soil\text{-}oral} = \frac{ADD_{soil\text{-}oral}}{RfD}$ $HI_{soil\text{-}oral} =$ S $HQ_{soil\text{-}oral}$				
COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{soil\text{-}oral}$ (mg/kg-day)	RfD SubChronic (mg/kg-day)	$HQ_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	5.8E-10	7.0E+00	8.3E-11
1,1-Dichloroethane	0.0036	1	5.8E-10	2.0E+00	2.9E-10
1,2,3-Trichlorobenzene	0.031	1	5.0E-09	8.0E-03	6.3E-07
1,2,4-Trichlorobenzene	0.33	1	5.3E-08	9.0E-02	5.9E-07
1,2-Dichlorobenzene	0.0095	1	1.5E-09	9.0E-01	1.7E-09
1,2-Dichloroethane	0.011	1	1.8E-09	2.0E-02	9.0E-08
1,3-Dichlorobenzene	0.0096	1	1.5E-09	9.0E-01	1.7E-09
1,4-Dichlorobenzene	0.011	1	1.7E-09	9.0E-01	1.9E-09
2-Butanone	0.030	1	4.8E-09	6.0E-01	8.0E-09
2-Chlorotoluene	0.0032	1	5.2E-10	2.0E-01	2.6E-09
Acetone	0.090	1	1.4E-08	2.7E+00	5.4E-09
Benzene	0.0092	1	1.5E-09	1.0E-02	1.5E-07
Carbon Disulfide	0.026	1	4.1E-09	1.0E-01	4.1E-08
Chlorobenzene	0.0032	1	5.2E-10	7.0E-02	7.5E-09
Chloroform	0.0064	1	1.0E-09	1.0E-02	1.0E-07
cis-1,2-Dichloroethene	0.0042	1	6.8E-10	2.0E-02	3.4E-08
Diethylether	0.0034	1	5.5E-10	2.0E+00	2.8E-10
Ethylbenzene	0.018	1	2.8E-09	5.0E-02	5.7E-08
Methylene Chloride	0.017	1	2.7E-09	6.0E-03	4.5E-07
Naphthalene	0.87	0.3	4.2E-08	2.0E-01	2.1E-07
Tetrachloroethene	0.0032	1	5.2E-10	6.0E-03	8.7E-08
Toluene	0.016	1	2.5E-09	8.0E-01	3.1E-09
Trichloroethene	0.011	1	1.8E-09	5.0E-04	3.7E-06
Vinyl Chloride	0.0059	1	9.5E-10	3.0E-03	3.2E-07
Xylene (Total)	0.038	1	6.1E-09	4.0E-01	1.5E-08
Styrene	0.0043	1	7.0E-10	2.0E+00	3.5E-10
1,2-Dichloropropane	0.0033	1	5.4E-10	NA	NC
1,2,3-Trichloropropane	0.0032	1	5.2E-10	8.0E-02	6.5E-09
1,4-Dioxane	0.12	1	1.9E-08	3.0E-02	6.3E-07
2,4-Dimethylphenol	0.67	1	1.1E-07	5.0E-02	2.1E-06
1-Methylnaphthalene	2.6	0.3	1.3E-07	7.0E-03	1.8E-05
2-Methylnaphthalene	0.96	0.3	4.7E-08	4.0E-03	1.2E-05
2-Methylphenol	0.66	1	1.1E-07	5.0E-01	2.1E-07
4-Methylphenol	1.5	1	2.5E-07	5.0E-03	5.0E-05
Acenaphthene	1.2	0.3	5.8E-08	2.0E-01	2.9E-07
Acenaphthylene	0.78	0.3	3.8E-08	3.0E-01	1.3E-07
Anthracene	1.9	0.3	9.3E-08	1.0E+00	9.3E-08
Benzo(a)Anthracene	2.6	0.3	1.2E-07	3.0E-01	4.1E-07
Benzo(a)Pyrene	1.9	0.3	9.1E-08	3.0E-01	3.0E-07
Benzo(e)Pyrene	2.8	1	4.5E-07	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	1.1E-07	3.0E-01	3.7E-07
Benzo(g,h,i)Perylene	1.1	0.3	5.1E-08	3.0E-01	1.7E-07
Benzo(k)Fluoranthene	1.5	0.3	7.3E-08	3.0E-01	2.4E-07
Bis(2-Ethylhexyl)phthalate	717	1	1.2E-04	2.0E-02	5.8E-03
Butylbenzylphthalate	0.68	0.96	1.1E-07	2.0E+00	5.3E-08
Chrysene	2.2	0.3	1.1E-07	3.0E-01	3.5E-07
Dibenzo(a,h)anthracene	0.54	0.3	2.6E-08	3.0E-01	8.8E-08
Dibenzofuran	1.0	1	1.7E-07	4.0E-03	4.1E-05
Di-n-butylphthalate	0.66	0.96	1.0E-07	1.0E+00	1.0E-07
Fluoranthene	5.4	0.3	2.6E-07	4.0E-01	6.5E-07
Fluorene	1.3	0.3	6.4E-08	4.0E-01	1.6E-07
Indeno(1,2,3-cd)Pyrene	1.1	0.3	5.3E-08	3.0E-01	1.8E-07
Phenanthrene	5.3	0.3	2.6E-07	3.0E-01	8.5E-07
Phenol	0.99	1	1.6E-07	3.0E-01	5.3E-07
Pyrene	4.2	0.3	2.0E-07	3.0E-01	6.8E-07
bis(2-Chloroethoxy)methane	0.67	1	1.1E-07	3.0E-02	3.6E-06
Pentachlorophenol	2.7	1	4.4E-07	5.0E-03	8.7E-05
3,3-Dichlorobenzidine	1.3	1	2.1E-07	NA	NC
C11-C22 Aromatic Fraction	454	0.3	2.2E-05	3.0E-01	7.3E-05
C19-C36 Aliphatic Fraction	665	1	1.1E-04	6.0E+00	1.8E-05
C5-C8 Aliphatic Fraction	11	1	1.8E-06	4.0E-01	4.4E-06
C9-C10 Aromatic Fraction	26	1	4.1E-06	3.0E-01	1.4E-05
C9-C18 Aliphatic Fraction	68	1	1.1E-05	1.0E+00	1.1E-05
4,4'-DDD	0.0045	1	7.3E-10	5.0E-04	1.5E-06
4,4'-DDE	0.0052	1	8.4E-10	5.0E-04	1.7E-06
4,4'-DDT	0.016	1	2.6E-09	5.0E-04	5.2E-06
alpha-BHC	0.0045	1	7.2E-10	3.0E-03	2.4E-07
beta-BHC	0.0045	1	7.2E-10	3.0E-03	2.4E-07
Dieldrin	0.013	1	2.1E-09	5.0E-05	4.1E-05
Endrin Ketone	0.0046	1	7.4E-10	3.0E-04	2.5E-06
gamma-BHC	0.0045	1	7.2E-10	3.0E-03	2.4E-07
Heptachlor Epoxide	0.0065	1	1.1E-09	1.3E-05	8.1E-05
Hexachlorobenzene	0.0047	1	7.6E-10	1.0E-05	7.6E-05
Methoxychlor	0.0064	1	1.0E-09	5.0E-03	2.1E-07
2,4-D	0.14	0.96	2.1E-08	1.0E-02	2.1E-06
2,4,5-T	0.058	0.96	9.0E-09	1.0E-01	9.0E-08
Dicamba	0.068	1	1.1E-08	3.0E-02	3.7E-07
Aroclor - 1242	0.24	1	3.8E-08	5.0E-05	7.7E-04
Aroclor - 1248	0.23	1	3.7E-08	5.0E-05	7.4E-04
Aroclor - 1254	0.57	1	9.2E-08	5.0E-05	1.8E-03
Aroclor - 1260	3.3	1	5.3E-07	5.0E-05	1.1E-02
Aroclor - 1262	0.22	1	3.6E-08	5.0E-05	7.1E-04
Aroclor - 1268	0.21	1	3.4E-08	5.0E-05	6.9E-04
Antimony	5.0	1	8.0E-07	4.0E-04	2.0E-03
Arsenic	53	0.5	4.3E-06	3.0E-04	1.4E-02
Barium	74	1	1.2E-05	7.0E-02	1.7E-04
Beryllium	0.24	1	3.9E-08	5.0E-03	7.8E-06
Cadmium	1.8	1	2.9E-07	1.0E-03	2.9E-04
Chromium (total)	27	1	4.4E-06	2.0E-02	2.2E-04
Copper	1010	0.7	1.2E-04	3.7E-02	3.1E-03
Cyanide	1.3	1	2.1E-07	6.0E-03	3.5E-05
Iron	81800	0.7	9.4E-03	7.0E-01	1.3E-02
Lead	773	0.3	3.7E-05	7.5E-04	5.0E-02
Mercury	2.7	0.5	2.2E-07	3.0E-04	7.3E-04
Nickel	23	1	3.7E-06	2.0E-02	1.8E-04
Selenium	9.8	1	1.6E-06	5.0E-03	3.2E-04
Silver	1.7	1	2.7E-07	5.0E-03	5.4E-05
Thallium	3.1	1	5.0E-07	8.0E-04	6.3E-04
Vanadium	48	1	7.8E-06	9.0E-03	8.7E-04
Zinc	249	1	4.0E-05	3.0E-01	1.3E-04
				HI_{oral} =	**1.1E-01**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE F-11 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY DOSES AND RISK ESTIMATES FOR EXPOSURE TO DUST VIA GASTROINTESTINAL TRACT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Adut, age 65)
CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale

See TABLE F-2 for Exposure Point Concentration Derivation

Exposure to Dust via Gastrointestinal Tract

$$LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}c} * C1}{BW * AP_c}$$

$ELCR_{soil\text{-}oral} = LADD_{soil\text{-}oral} * CSF$

Total $ELCR_{soil\text{-}oral}$ = S $ELCR_{soil\text{-}oral}$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}c}$ (unitless)	$LADD_{soil\text{-}oral}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{soil\text{-}ral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	4.2E-12	NA	NC
1,1-Dichloroethane	0.0036	1	4.2E-12	NA	NC
1,2,3-Trichlorobenzene	0.031	1	3.6E-11	NA	NC
1,2,4-Trichlorobenzene	0.33	1	3.8E-10	2.9E-02	1.10E-11
1,2-Dichlorobenzene	0.0095	1	1.1E-11	NA	NC
1,2-Dichloroethane	0.011	1	1.3E-11	9.1E-02	1.17E-12
1,3-Dichlorobenzene	0.0096	1	1.1E-11	NA	NC
1,4-Dichlorobenzene	0.011	1	1.2E-11	2.4E-02	2.95E-13
2-Butanone	0.030	1	3.4E-11	NA	NC
2-Chlorotoluene	0.0032	1	3.7E-12	NA	NC
Acetone	0.090	1	1.0E-10	NA	NC
Benzene	0.0092	1	1.1E-11	5.5E-02	5.84E-13
Carbon Disulfide	0.026	1	3.0E-11	NA	NC
Chlorobenzene	0.0032	1	3.7E-12	NA	NC
Chloroform	0.0064	1	7.4E-12	NA	NC
cis-1,2-Dichloroethene	0.0042	1	4.9E-12	NA	NC
Diethylether	0.0034	1	4.0E-12	NA	NC
Ethylbenzene	0.018	1	2.0E-11	NA	NC
Methylene Chloride	0.017	1	1.9E-11	2.0E-03	3.82E-14
Naphthalene	0.87	1	1.0E-09	NA	NC
Tetrachloroethene	0.0032	1	3.7E-12	2.0E-02	7.48E-14
Toluene	0.016	1	1.8E-11	NA	NC
Trichloroethene	0.011	1	1.3E-11	4.6E-02	6.08E-13
Vinyl Chloride	0.0059	1	6.8E-12	1.4E+00	9.48E-12
Xylene (Total)	0.038	1	4.3E-11	NA	NC
Styrene	0.0043	1	5.0E-12	3.0E-02	1.49E-13
1,2-Dichloropropane	0.0033	1	3.9E-12	6.8E-02	2.62E-13
1,2,3-Trichloropropane	0.0032	1	3.7E-12	3.0E+01	1.12E-10
1,4-Dioxane	0.12	1	1.3E-10	1.0E-01	1.34E-11
2,4-Dimethylphenol	0.67	1	7.7E-10	NA	NC
1-Methylnaphthalene	2.6	1	3.0E-09	2.9E-02	8.82E-11
2-Methylnaphthalene	0.96	1	1.1E-09	NA	NC
2-Methylphenol	0.66	1	7.6E-10	NA	NC
4-Methylphenol	1.5	1	1.8E-09	NA	NC
Acenaphthene	1.2	1	1.4E-09	NA	NC
Acenaphthylene	0.78	1	9.0E-10	NA	NC
Anthracene	1.9	1	2.2E-09	NA	NC
Benzo(a)Anthracene	2.6	0.3	8.9E-10	7.3E-01	6.49E-10
Benzo(a)Pyrene	1.9	0.3	6.5E-10	7.3E+00	4.74E-09
Benzo(e)Pyrene	2.8	1	3.2E-09	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	7.9E-10	7.3E-01	5.80E-10
Benzo(g,h,i)Perylene	1.1	1	1.2E-09	NA	NC
Benzo(k)Fluoranthene	1.5	0.3	5.2E-10	7.3E-02	3.82E-11
Bis(2-Ethylhexyl)phthalate	717	1	8.3E-07	1.4E-02	1.16E-08
Butylbenzylphthalate	0.68	1	7.8E-10	NA	NC
Chrysene	2.2	0.3	7.6E-10	7.3E-02	5.52E-11
Dibenzo(a,h)anthracene	0.54	0.3	1.9E-10	7.3E+00	1.37E-09
Dibenzofuran	1.0	1	1.2E-09	NA	NC
Di-n-butylphthalate	0.66	1	7.6E-10	NA	NC
Fluoranthene	5.4	1	6.2E-09	NA	NC
Fluorene	1.3	1	1.5E-09	NA	NC
Indeno(1,2,3-cd)Pyrene	1.1	0.3	3.8E-10	7.3E-01	2.76E-10
Phenanthrene	5.3	1	6.1E-09	NA	NC
Phenol	0.99	1	1.1E-09	NA	NC
Pyrene	4.2	1	4.9E-09	NA	NC
bis(2-Chloroethoxy)methane	0.67	1	7.7E-10	NA	NC
Pentachlorophenol	2.7	1	3.1E-09	4.0E-01	1.25E-09
3,3-Dichlorobenzidine	1.3	1	1.5E-09	4.5E-01	6.80E-10
C11-C22 Aromatic Fraction	454	1	5.2E-07	NA	NC
C19-C36 Aliphatic Fraction	665	1	7.7E-07	NA	NC
C5-C8 Aliphatic Fraction	11	1	1.3E-08	NA	NC
C9-C10 Aromatic Fraction	26	1	3.0E-08	NA	NC
C9-C18 Aliphatic Fraction	68	1	7.8E-08	NA	NC
4,4'-DDD	0.0045	1	5.2E-12	2.4E-01	1.25E-12
4,4'-DDE	0.0052	1	6.0E-12	3.4E-01	2.04E-12
4,4'-DDT	0.016	1	1.9E-11	3.4E-01	6.32E-12
alpha-BHC	0.0045	1	5.2E-12	6.3E+00	3.25E-11
beta-BHC	0.0045	1	5.2E-12	1.8E+00	9.30E-12
Dieldrin	0.013	1	1.5E-11	1.6E+01	2.35E-10
Endrin Ketone	0.0046	1	5.3E-12	NA	NC
gamma-BHC	0.0045	1	5.2E-12	1.3E+00	6.71E-12
Heptachlor Epoxide	0.0065	1	7.5E-12	9.1E+00	6.84E-11
Hexachlorobenzene	0.0047	1	5.4E-12	1.6E+00	8.70E-12
Methoxychlor	0.0064	1	7.3E-12	NA	NC
2,4-D	0.14	1	1.6E-10	NA	NC
2,4,5-T	0.058	1	6.7E-11	NA	NC
Dicamba	0.068	1	7.9E-11	NA	NC
Aroclor - 1242	0.24	1	2.7E-10	2.0E+00	5.48E-10
Aroclor - 1248	0.23	1	2.6E-10	2.0E+00	5.27E-10
Aroclor - 1254	0.57	1	6.6E-10	2.0E+00	1.31E-09
Aroclor - 1260	3.3	1	3.8E-09	2.0E+00	7.62E-09
Aroclor - 1262	0.22	1	2.5E-10	2.0E+00	5.09E-10
Aroclor - 1268	0.21	1	2.5E-10	2.0E+00	4.91E-10
Antimony	5.0	1	5.7E-09	NA	NC
Arsenic	53	0.5	3.1E-08	1.5E+00	4.60E-08
Barium	74	1	8.5E-08	NA	NC
Beryllium	0.24	1	2.8E-10	NA	NC
Cadmium	1.8	1	2.1E-09	NA	NC
Chromium (total)	27	1	3.1E-08	NA	NC
Copper	1010	1	1.2E-06	NA	NC
Cyanide	1.3	1	1.5E-09	NA	NC
Iron	81800	1	9.4E-05	NA	NC
Lead	773	1	8.9E-07	NA	NC
Mercury	2.7	1	3.1E-09	NA	NC
Nickel	23	1	2.6E-08	NA	NC
Selenium	9.8	1	1.1E-08	NA	NC
Silver	1.7	1	1.9E-09	NA	NC
Thallium	3.1	1	3.6E-09	NA	NC
Vanadium	48	1	5.6E-08	NA	NC
Zinc	249	1	2.9E-07	NA	NC
				Total $ELCR_{oral}$:	**7.9E-08**

Notes:

1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE F-12
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Young Child, age 1<2)
SUBCHRONIC NON-CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale

See TABLE F-2 for Exposure Point Concentration Derivation

Inhalation of Fugitive Dust

$$ADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}}$$

$$HQ_{inh\text{-}dust} = \frac{ADE_{inh\text{-}dust}}{RfC} \qquad HI_{inh\text{-}dust} = \Sigma\ HQ_{inh\text{-}dust}$$

COC	EPC_{dust} EPC2 (mg/m³)	$ADE_{inh\text{-}dust}$ (mg/m³)	RfC Subchronic (mg/m³)	$HQ_{inh\text{-}dust}$ (unitless)
1,1,1-Trichloroethane	5.1E-09	9.1E-11	5.0E+00	1.8E-11
1,1-Dichloroethane	5.1E-09	9.0E-11	8.0E+00	1.1E-11
1,2,3-Trichlorobenzene	4.4E-08	7.8E-10	2.0E-02	3.9E-08
1,2,4-Trichlorobenzene	4.6E-07	8.2E-09	2.0E-02	4.1E-07
1,2-Dichlorobenzene	1.3E-08	2.4E-10	2.4E+00	9.9E-11
1,2-Dichloroethane	1.6E-08	2.8E-10	7.0E-02	4.0E-09
1,3-Dichlorobenzene	1.3E-08	2.4E-10	2.4E+00	1.0E-10
1,4-Dichlorobenzene	1.5E-08	2.7E-10	2.4E+00	1.1E-10
2-Butanone	4.2E-08	7.5E-10	5.0E+00	1.5E-10
2-Chlorotoluene	4.5E-09	8.1E-11	8.0E-01	1.0E-10
Acetone	1.3E-07	2.2E-09	8.0E-01	2.8E-09
Benzene	1.3E-08	2.3E-10	1.0E-02	2.3E-08
Carbon Disulfide	3.6E-08	6.4E-10	7.0E-01	9.2E-10
Chlorobenzene	4.5E-09	8.1E-11	5.0E-01	1.6E-10
Chloroform	8.9E-09	1.6E-10	6.6E-01	2.4E-10
cis-1,2-Dichloroethene	5.9E-09	1.1E-10	6.0E-02	1.8E-09
Diethylether	4.8E-09	8.6E-11	1.6E+00	5.4E-11
Ethylbenzene	2.5E-08	4.4E-10	9.0E+00	4.9E-11
Methylene Chloride	2.3E-08	4.1E-10	6.0E-01	6.9E-10
Naphthalene	1.2E-06	2.2E-08	3.0E-03	7.3E-06
Tetrachloroethene	4.5E-09	8.1E-11	4.0E-02	2.0E-09
Toluene	2.2E-08	3.9E-10	5.0E+00	7.8E-11
Trichloroethene	1.6E-08	2.9E-10	2.0E-03	1.4E-07
Vinyl Chloride	8.2E-09	1.5E-10	1.0E-01	1.5E-09
Xylene (Total)	5.3E-08	9.4E-10	4.0E-01	2.4E-09
Styrene	6.0E-09	1.1E-10	3.0E+00	3.6E-11
1,2-Dichloropropane	4.7E-09	8.4E-11	1.2E-02	7.0E-09
1,2,3-Trichloropropane	4.5E-09	8.1E-11	3.0E-04	2.7E-07
1,4-Dioxane	1.6E-07	2.9E-09	3.0E-02	9.7E-08
2,4-Dimethylphenol	9.3E-07	1.7E-08	2.0E-01	8.3E-08
1-Methylnaphthalene	3.7E-06	6.6E-08	5.0E-01	1.3E-07
2-Methylnaphthalene	1.3E-06	2.4E-08	5.0E-01	4.8E-08
2-Methylphenol	9.3E-07	1.7E-08	1.8E-01	9.5E-08
4-Methylphenol	2.1E-06	3.8E-08	1.2E-01	3.2E-07
Acenaphthene	1.7E-06	3.0E-08	5.0E-01	6.0E-08
Acenaphthylene	1.1E-06	2.0E-08	5.0E-01	3.9E-08
Anthracene	2.7E-06	4.8E-08	5.0E-01	9.6E-08
Benzo(a)Anthracene	3.6E-06	6.4E-08	5.0E-01	1.3E-07
Benzo(a)Pyrene	2.6E-06	4.7E-08	5.0E-01	9.4E-08
Benzo(e)Pyrene	3.9E-06	6.9E-08	NA	NC
Benzo(b)Fluoranthene	3.2E-06	5.7E-08	5.0E-01	1.1E-07
Benzo(g,h,i)Perylene	1.5E-06	2.6E-08	5.0E-01	5.3E-08
Benzo(k)Fluoranthene	2.1E-06	3.8E-08	5.0E-01	7.6E-08
Bis(2-Ethylhexyl)phthalate	1.0E-03	1.8E-05	7.0E-03	2.6E-03
Butylbenzylphthalate	9.5E-07	1.7E-08	NA	NC
Chrysene	3.1E-06	5.5E-08	5.0E-01	1.1E-07
Dibenzo(a,h)anthracene	7.6E-07	1.4E-08	5.0E-01	2.7E-08
Dibenzofuran	1.4E-06	2.6E-08	NA	NC
Di-n-butylphthalate	9.3E-07	1.7E-08	NA	NC
Fluoranthene	7.6E-06	1.4E-07	5.0E-01	2.7E-07
Fluorene	1.8E-06	3.3E-08	5.0E-01	6.6E-08
Indeno(1,2,3-cd)Pyrene	1.5E-06	2.7E-08	5.0E-01	5.5E-08
Phenanthrene	7.4E-06	1.3E-07	5.0E-01	2.6E-07
Phenol	1.4E-06	2.5E-08	2.6E-01	9.5E-08
Pyrene	5.9E-06	1.1E-07	5.0E-01	2.1E-07
bis(2-Chloroethoxy)methane	9.4E-07	1.7E-08	NA	NC
Pentachlorophenol	3.8E-06	6.8E-08	7.0E-05	9.7E-04
3,3-Dichlorobenzidine	1.8E-06	3.3E-08	NA	NC
C11-C22 Aromatic Fraction	6.4E-04	1.1E-05	5.0E-01	2.3E-05
C19-C36 Aliphatic Fraction	9.3E-04	1.7E-05	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	2.8E-07	2.0E-01	1.4E-06
C9-C10 Aromatic Fraction	3.6E-05	6.4E-07	5.0E-01	1.3E-06
C9-C18 Aliphatic Fraction	9.5E-05	1.7E-06	6.0E-01	2.8E-06
4,4'-DDD	6.3E-09	1.1E-10	1.8E-03	6.5E-08
4,4'-DDE	7.3E-09	1.3E-10	1.8E-03	7.4E-08
4,4'-DDT	2.3E-08	4.0E-10	1.8E-03	2.3E-07
alpha-BHC	6.3E-09	1.1E-10	1.1E-03	1.0E-07
beta-BHC	6.3E-09	1.1E-10	1.1E-03	1.0E-07
Dieldrin	1.8E-08	3.2E-10	1.8E-04	1.8E-06
Endrin Ketone	6.4E-09	1.1E-10	1.1E-03	1.0E-07
gamma-BHC	6.3E-09	1.1E-10	1.1E-02	1.0E-08
Heptachlor Epoxide	9.1E-09	1.6E-10	4.6E-05	3.5E-06
Hexachlorobenzene	6.6E-09	1.2E-10	4.0E-05	3.0E-06
Methoxychlor	8.9E-09	1.6E-10	1.8E-02	8.9E-09
2,4-D	1.9E-07	3.5E-09	NA	NC
2,4,5-T	8.2E-08	1.5E-09	NA	NC
Dicamba	9.6E-08	1.7E-09	NA	NC
Aroclor - 1242	3.3E-07	5.9E-09	2.0E-05	3.0E-04
Aroclor - 1248	3.2E-07	5.7E-09	2.0E-05	2.9E-04
Aroclor - 1254	8.0E-07	1.4E-08	2.0E-05	7.1E-04
Aroclor - 1260	4.6E-06	8.3E-08	2.0E-05	4.1E-03
Aroclor - 1262	3.1E-07	5.5E-09	2.0E-05	2.8E-04
Aroclor - 1268	3.0E-07	5.3E-09	2.0E-05	2.7E-04
Antimony	7.0E-06	1.2E-07	1.0E-02	1.2E-05
Arsenic	7.5E-05	1.3E-06	2.0E-05	6.7E-02
Barium	1.0E-04	1.9E-06	5.0E-03	3.7E-04
Beryllium	3.4E-07	6.0E-09	2.0E-05	3.0E-04
Cadmium	2.5E-06	4.5E-08	2.0E-05	2.3E-03
Chromium (total)	3.8E-05	6.8E-07	3.0E-04	2.3E-03
Copper	1.4E-03	2.5E-05	3.0E-03	8.4E-03
Cyanide	1.8E-06	3.3E-08	3.0E-03	1.1E-05
Iron	1.1E-01	2.0E-03	NA	NC
Lead	1.1E-03	1.9E-05	1.0E-03	1.9E-02
Mercury	3.8E-06	6.8E-08	3.0E-04	2.3E-04
Nickel	3.2E-05	5.7E-07	1.0E-03	5.7E-04
Selenium	1.4E-05	2.4E-07	3.0E-03	8.1E-05
Silver	2.3E-06	4.2E-08	1.4E-04	3.0E-04
Thallium	4.4E-06	7.8E-08	1.4E-05	5.6E-03
Vanadium	6.8E-05	1.2E-06	1.0E-03	1.2E-03
Zinc	3.5E-04	6.2E-06	1.4E-03	4.4E-03
			$HI_{inh\text{-}dust}$:	**1.2E-01**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE F-12 (Continued)
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF FUGITIVE DUST
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Child, age 7<8)
SUBCHRONIC NON-CANCER EFFECTS

DRAFT

See TABLE F-4 for Exposure Variables and Rationale See TABLE F-2 for Exposure Point Concentration Derivation	Inhalation of Fugitive Dust $ADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}}$ $HQ_{inh\text{-}dust} = \frac{ADE_{inh\text{-}dust}}{RfC}$		$HI_{inh\text{-}dust} =$	S $HQ_{inh\text{-}dust}$
COC	EPC_{dust} EPC2 (mg/m³)	$ADE_{inh\text{-}dust}$ (mg/m³)	RfC SubChronic (mg/m³)	$HQ_{inh\text{-}dust}$ (unitless)
1,1,1-Trichloroethane	5.1E-09	3.3E-10	5.0E+00	6.6E-11
1,1-Dichloroethane	5.1E-09	3.3E-10	8.0E+00	4.1E-11
1,2,3-Trichlorobenzene	4.4E-08	2.9E-09	2.0E-02	1.4E-07
1,2,4-Trichlorobenzene	4.6E-07	3.0E-08	2.0E-02	1.5E-06
1,2-Dichlorobenzene	1.3E-08	8.7E-10	2.4E+00	3.6E-10
1,2-Dichloroethane	1.6E-08	1.0E-09	7.0E-02	1.5E-08
1,3-Dichlorobenzene	1.3E-08	8.8E-10	2.4E+00	3.7E-10
1,4-Dichlorobenzene	1.5E-08	9.8E-10	2.4E+00	4.1E-10
2-Butanone	4.2E-08	2.7E-09	5.0E+00	5.5E-10
2-Chlorotoluene	4.5E-09	3.0E-10	8.0E-01	3.7E-10
Acetone	1.3E-07	8.2E-09	8.0E-01	1.0E-08
Benzene	1.3E-08	8.4E-10	1.0E-02	8.4E-08
Carbon Disulfide	3.6E-08	2.4E-09	7.0E-01	3.4E-09
Chlorobenzene	4.5E-09	3.0E-10	5.0E-01	5.9E-10
Chloroform	8.9E-09	5.9E-10	6.6E-01	8.9E-10
cis-1,2-Dichloroethene	5.9E-09	3.9E-10	6.0E-02	6.5E-09
Diethylether	4.8E-09	3.2E-10	1.6E+00	2.0E-10
Ethylbenzene	2.5E-08	1.6E-09	9.0E+00	1.8E-10
Methylene Chloride	2.3E-08	1.5E-09	6.0E-01	2.5E-09
Naphthalene	1.2E-06	8.0E-08	3.0E-03	2.7E-05
Tetrachloroethene	4.5E-09	3.0E-10	4.0E-02	7.4E-09
Toluene	2.2E-08	1.4E-09	5.0E+00	2.8E-10
Trichloroethene	1.6E-08	1.1E-09	2.0E-03	5.3E-07
Vinyl Chloride	8.2E-09	5.4E-10	1.0E-01	5.4E-09
Xylene (Total)	5.3E-08	3.5E-09	4.0E-01	8.6E-09
Styrene	6.0E-09	4.0E-10	3.0E+00	1.3E-10
1,2-Dichloropropane	4.7E-09	3.1E-10	1.2E-02	2.6E-08
1,2,3-Trichloropropane	4.5E-09	3.0E-10	3.0E-04	9.9E-07
1,4-Dioxane	1.6E-07	1.1E-08	3.0E-02	3.6E-07
2,4-Dimethylphenol	9.3E-07	6.1E-08	2.0E-01	3.1E-07
1-Methylnaphthalene	3.7E-06	2.4E-07	5.0E-01	4.8E-07
2-Methylnaphthalene	1.3E-06	8.8E-08	5.0E-01	1.8E-07
2-Methylphenol	9.3E-07	6.1E-08	1.8E-01	3.5E-07
4-Methylphenol	2.1E-06	1.4E-07	1.2E-01	1.2E-06
Acenaphthene	1.7E-06	1.1E-07	5.0E-01	2.2E-07
Acenaphthylene	1.1E-06	7.2E-08	5.0E-01	1.4E-07
Anthracene	2.7E-06	1.8E-07	5.0E-01	3.5E-07
Benzo(a)Anthracene	3.6E-06	2.4E-07	5.0E-01	4.7E-07
Benzo(a)Pyrene	2.6E-06	1.7E-07	5.0E-01	3.4E-07
Benzo(e)Pyrene	3.9E-06	2.5E-07	NA	NC
Benzo(b)Fluoranthene	3.2E-06	2.1E-07	5.0E-01	4.2E-07
Benzo(g,h,i)Perylene	1.5E-06	9.7E-08	5.0E-01	1.9E-07
Benzo(k)Fluoranthene	2.1E-06	1.4E-07	5.0E-01	2.8E-07
Bis(2-Ethylhexyl)phthalate	1.0E-03	6.6E-05	7.0E-03	9.4E-03
Butylbenzylphthalate	9.5E-07	6.2E-08	NA	NC
Chrysene	3.1E-06	2.0E-07	5.0E-01	4.0E-07
Dibenzo(a,h)anthracene	7.6E-07	5.0E-08	5.0E-01	1.0E-07
Dibenzofuran	1.4E-06	9.4E-08	NA	NC
Di-n-butylphthalate	9.3E-07	6.1E-08	NA	NC
Fluoranthene	7.6E-06	5.0E-07	5.0E-01	9.9E-07
Fluorene	1.8E-06	1.2E-07	5.0E-01	2.4E-07
Indeno(1,2,3-cd)Pyrene	1.5E-06	1.0E-07	5.0E-01	2.0E-07
Phenanthrene	7.4E-06	4.9E-07	5.0E-01	9.7E-07
Phenol	1.4E-06	9.1E-08	2.6E-01	3.5E-07
Pyrene	5.9E-06	3.9E-07	5.0E-01	7.7E-07
bis(2-Chloroethoxy)methane	9.4E-07	6.1E-08	NA	NC
Pentachlorophenol	3.8E-06	2.5E-07	7.0E-05	3.5E-03
3,3-Dichlorobenzidine	1.8E-06	1.2E-07	NA	NC
C11-C22 Aromatic Fraction	6.4E-04	4.2E-05	5.0E-01	8.3E-05
C19-C36 Aliphatic Fraction	9.3E-04	6.1E-05	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	1.0E-06	2.0E-01	5.1E-06
C9-C10 Aromatic Fraction	3.6E-05	2.4E-06	5.0E-01	4.7E-06
C9-C18 Aliphatic Fraction	9.5E-05	6.2E-06	6.0E-01	1.0E-05
4,4'-DDD	6.3E-09	4.2E-10	1.8E-03	2.4E-07
4,4'-DDE	7.3E-09	4.8E-10	1.8E-03	2.7E-07
4,4'-DDT	2.3E-08	1.5E-09	1.8E-03	8.5E-07
alpha-BHC	6.3E-09	4.1E-10	1.1E-03	3.7E-07
beta-BHC	6.3E-09	4.1E-10	1.1E-03	3.7E-07
Dieldrin	1.8E-08	1.2E-09	1.8E-04	6.7E-06
Endrin Ketone	6.4E-09	4.2E-10	1.1E-03	3.8E-07
gamma-BHC	6.3E-09	4.1E-10	1.1E-02	3.7E-08
Heptachlor Epoxide	9.1E-09	6.0E-10	4.6E-05	1.3E-05
Hexachlorobenzene	6.6E-09	4.3E-10	4.0E-05	1.1E-05
Methoxychlor	8.9E-09	5.8E-10	1.8E-02	3.2E-08
2,4-D	1.9E-07	1.3E-08	NA	NC
2,4,5-T	8.2E-08	5.4E-09	NA	NC
Dicamba	9.6E-08	6.3E-09	NA	NC
Aroclor - 1242	3.3E-07	2.2E-08	2.0E-05	1.1E-03
Aroclor - 1248	3.2E-07	2.1E-08	2.0E-05	1.0E-03
Aroclor - 1254	8.0E-07	5.2E-08	2.0E-05	2.6E-03
Aroclor - 1260	4.6E-06	3.0E-07	2.0E-05	1.5E-02
Aroclor - 1262	3.1E-07	2.0E-08	2.0E-05	1.0E-03
Aroclor - 1268	3.0E-07	2.0E-08	2.0E-05	9.8E-04
Antimony	7.0E-06	4.6E-07	1.0E-02	4.6E-05
Arsenic	7.5E-05	4.9E-06	2.0E-05	2.4E-01
Barium	1.0E-04	6.8E-06	5.0E-03	1.4E-03
Beryllium	3.4E-07	2.2E-08	2.0E-05	1.1E-03
Cadmium	2.5E-06	1.7E-07	2.0E-05	8.3E-03
Chromium (total)	3.8E-05	2.5E-06	3.0E-04	8.3E-03
Copper	1.4E-03	9.3E-05	3.0E-03	3.1E-02
Cyanide	1.8E-06	1.2E-07	3.0E-03	4.0E-05
Iron	1.1E-01	7.5E-03	NA	NC
Lead	1.1E-03	7.1E-05	1.0E-03	7.1E-02
Mercury	3.8E-06	2.5E-07	3.0E-04	8.3E-04
Nickel	3.2E-05	2.1E-06	1.0E-03	2.1E-03
Selenium	1.4E-05	9.0E-07	3.0E-03	3.0E-04
Silver	2.3E-06	1.5E-07	1.4E-04	1.1E-03
Thallium	4.4E-06	2.9E-07	1.4E-05	2.0E-02
Vanadium	6.8E-05	4.4E-06	1.0E-03	4.4E-03
Zinc	3.5E-04	2.3E-05	1.4E-03	1.6E-02
			$HI_{inh\text{-}dust}$:	**4.5E-01**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

TABLE F-12 (Continued)
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Adult, age 65)
SUBCHRONIC NON-CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale

See TABLE F-2 for Exposure Point Concentration Derivation

Inhalation of Fugitive Dust

$$ADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2}{AP_{nc}}$$

$$HQ_{inh\text{-}dust} = \frac{ADE_{inh\text{-}dust}}{RfC} \qquad HI_{inh\text{-}dust} = S\ HQ_{inh\text{-}dust}$$

COC	EPC_{dust} EPC2 (mg/m³)	$ADE_{inh\text{-}dust}$ (mg/m³)	RfC SubChronic (mg/m³)	$HQ_{inh\text{-}dust}$ (unitless)
1,1,1-Trichloroethane	5.1E-09	7.5E-10	5.0E+00	1.5E-10
1,1-Dichloroethane	5.1E-09	7.5E-10	8.0E+00	9.4E-11
1,2,3-Trichlorobenzene	4.4E-08	6.4E-09	2.0E-02	3.2E-07
1,2,4-Trichlorobenzene	4.6E-07	6.8E-08	2.0E-02	3.4E-06
1,2-Dichlorobenzene	1.3E-08	2.0E-09	2.4E+00	8.2E-10
1,2-Dichloroethane	1.6E-08	2.3E-09	7.0E-02	3.3E-08
1,3-Dichlorobenzene	1.3E-08	2.0E-09	2.4E+00	8.2E-10
1,4-Dichlorobenzene	1.5E-08	2.2E-09	2.4E+00	9.2E-10
2-Butanone	4.2E-08	6.2E-09	5.0E+00	1.2E-09
2-Chlorotoluene	4.5E-09	6.7E-10	8.0E-01	8.4E-10
Acetone	1.3E-07	1.9E-08	8.0E-01	2.3E-08
Benzene	1.3E-08	1.9E-09	1.0E-02	1.9E-07
Carbon Disulfide	3.6E-08	5.3E-09	7.0E-01	7.6E-09
Chlorobenzene	4.5E-09	6.7E-10	5.0E-01	1.3E-09
Chloroform	8.9E-09	1.3E-09	6.6E-01	2.0E-09
cis-1,2-Dichloroethene	5.9E-09	8.8E-10	6.0E-02	1.5E-08
Diethylether	4.8E-09	7.1E-10	1.6E+00	4.4E-10
Ethylbenzene	2.5E-08	3.7E-09	9.0E+00	4.1E-10
Methylene Chloride	2.3E-08	3.4E-09	6.0E-01	5.7E-09
Naphthalene	1.2E-06	1.8E-07	3.0E-03	6.0E-05
Tetrachloroethene	4.5E-09	6.7E-10	4.0E-02	1.7E-08
Toluene	2.2E-08	3.2E-09	5.0E+00	6.4E-10
Trichloroethene	1.6E-08	2.4E-09	2.0E-03	1.2E-06
Vinyl Chloride	8.2E-09	1.2E-09	1.0E-01	1.2E-08
Xylene (Total)	5.3E-08	7.8E-09	4.0E-01	1.9E-08
Styrene	6.0E-09	8.9E-10	3.0E+00	3.0E-10
1,2-Dichloropropane	4.7E-09	6.9E-10	1.2E-02	5.8E-08
1,2,3-Trichloropropane	4.5E-09	6.7E-10	3.0E-04	2.2E-06
1,4-Dioxane	1.6E-07	2.4E-08	3.0E-02	8.0E-07
2,4-Dimethylphenol	9.3E-07	1.4E-07	2.0E-01	6.9E-07
1-Methylnaphthalene	3.7E-06	5.5E-07	5.0E-01	1.1E-06
2-Methylnaphthalene	1.3E-06	2.0E-07	5.0E-01	4.0E-07
2-Methylphenol	9.3E-07	1.4E-07	1.8E-01	7.8E-07
4-Methylphenol	2.1E-06	3.2E-07	1.2E-01	2.6E-06
Acenaphthene	1.7E-06	2.5E-07	5.0E-01	4.9E-07
Acenaphthylene	1.1E-06	1.6E-07	5.0E-01	3.2E-07
Anthracene	2.7E-06	4.0E-07	5.0E-01	7.9E-07
Benzo(a)Anthracene	3.6E-06	5.3E-07	5.0E-01	1.1E-06
Benzo(a)Pyrene	2.6E-06	3.9E-07	5.0E-01	7.8E-07
Benzo(e)Pyrene	3.9E-06	5.7E-07	NA	NC
Benzo(b)Fluoranthene	3.2E-06	4.8E-07	5.0E-01	9.5E-07
Benzo(g,h,i)Perylene	1.5E-06	2.2E-07	5.0E-01	4.4E-07
Benzo(k)Fluoranthene	2.1E-06	3.1E-07	5.0E-01	6.3E-07
Bis(2-Ethylhexyl)phthalate	1.0E-03	1.5E-04	7.0E-03	2.1E-02
Butylbenzylphthalate	9.5E-07	1.4E-07	NA	NC
Chrysene	3.1E-06	4.5E-07	5.0E-01	9.1E-07
Dibenzo(a,h)anthracene	7.6E-07	1.1E-07	5.0E-01	2.3E-07
Dibenzofuran	1.4E-06	2.1E-07	NA	NC
Di-n-butylphthalate	9.3E-07	1.4E-07	NA	NC
Fluoranthene	7.6E-06	1.1E-06	5.0E-01	2.2E-06
Fluorene	1.8E-06	2.7E-07	5.0E-01	5.5E-07
Indeno(1,2,3-cd)Pyrene	1.5E-06	2.3E-07	5.0E-01	4.5E-07
Phenanthrene	7.4E-06	1.1E-06	5.0E-01	2.2E-06
Phenol	1.4E-06	2.1E-07	2.6E-01	7.9E-07
Pyrene	5.9E-06	8.7E-07	5.0E-01	1.7E-06
bis(2-Chloroethoxy)methane	9.4E-07	1.4E-07	NA	NC
Pentachlorophenol	3.8E-06	5.6E-07	7.0E-05	8.0E-03
3,3-Dichlorobenzidine	1.8E-06	2.7E-07	NA	NC
C11-C22 Aromatic Fraction	6.4E-04	9.4E-05	5.0E-01	1.9E-04
C19-C36 Aliphatic Fraction	9.3E-04	1.4E-04	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	2.3E-06	2.0E-01	1.1E-05
C9-C10 Aromatic Fraction	3.6E-05	5.3E-06	5.0E-01	1.1E-05
C9-C18 Aliphatic Fraction	9.5E-05	1.4E-05	6.0E-01	2.3E-05
4,4'-DDD	6.3E-09	9.4E-10	1.8E-03	5.4E-07
4,4'-DDE	7.3E-09	1.1E-09	1.8E-03	6.2E-07
4,4'-DDT	2.3E-08	3.3E-09	1.8E-03	1.9E-06
alpha-BHC	6.3E-09	9.3E-10	1.1E-03	8.4E-07
beta-BHC	6.3E-09	9.3E-10	1.1E-03	8.4E-07
Dieldrin	1.8E-08	2.6E-09	1.8E-04	1.5E-05
Endrin Ketone	6.4E-09	9.5E-10	1.1E-03	8.6E-07
gamma-BHC	6.3E-09	9.3E-10	1.1E-02	8.4E-08
Heptachlor Epoxide	9.1E-09	1.3E-09	4.6E-05	2.9E-05
Hexachlorobenzene	6.6E-09	9.8E-10	4.0E-05	2.4E-05
Methoxychlor	8.9E-09	1.3E-09	1.8E-02	7.3E-08
2,4-D	1.9E-07	2.9E-08	NA	NC
2,4,5-T	8.2E-08	1.2E-08	NA	NC
Dicamba	9.6E-08	1.4E-08	NA	NC
Aroclor - 1242	3.3E-07	4.9E-08	2.0E-05	2.5E-03
Aroclor - 1248	3.2E-07	4.7E-08	2.0E-05	2.4E-03
Aroclor - 1254	8.0E-07	1.2E-07	2.0E-05	5.9E-03
Aroclor - 1260	4.6E-06	6.8E-07	2.0E-05	3.4E-02
Aroclor - 1262	3.1E-07	4.6E-08	2.0E-05	2.3E-03
Aroclor - 1268	3.0E-07	4.4E-08	2.0E-05	2.2E-03
Antimony	7.0E-06	1.0E-06	1.0E-02	1.0E-04
Arsenic	7.5E-05	1.1E-05	2.0E-05	5.5E-01
Barium	1.0E-04	1.5E-05	5.0E-03	3.1E-03
Beryllium	3.4E-07	5.0E-08	2.0E-05	2.5E-03
Cadmium	2.5E-06	3.7E-07	2.0E-05	1.9E-02
Chromium (total)	3.8E-05	5.6E-06	3.0E-04	1.9E-02
Copper	1.4E-03	2.1E-04	3.0E-03	7.0E-02
Cyanide	1.8E-06	2.7E-07	3.0E-03	9.0E-05
Iron	1.1E-01	1.7E-02	NA	NC
Lead	1.1E-03	1.6E-04	1.0E-03	1.6E-01
Mercury	3.8E-06	5.6E-07	3.0E-04	1.9E-03
Nickel	3.2E-05	4.7E-06	1.0E-03	4.7E-03
Selenium	1.4E-05	2.0E-06	3.0E-03	6.7E-04
Silver	2.3E-06	3.4E-07	1.4E-04	2.5E-03
Thallium	4.4E-06	6.5E-07	1.4E-05	4.6E-02
Vanadium	6.8E-05	1.0E-05	1.0E-03	1.0E-02
Zinc	3.5E-04	5.1E-05	1.4E-03	3.7E-02
			$HI_{inh\text{-}dust}$:	**1.0E+00**

Notes:

1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE F-12 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF FUGITIVE DUST
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Resident (Adut, age 65)
CANCER EFFECTS

See TABLE F-4 for Exposure Variables and Rationale See TABLE F-2 for Exposure Point Concentration Derivation	**Inhalation of Fugitive Dust** $LADE_{inh\text{-}dust} = \frac{EPC_{dust} * EF * ED * EP * C2 * C4}{AP_c}$ $ELCR_{inh\text{-}dust}$ = $LADE_{inh\text{-}dust}$ * UR		Total $ELCR_{inh\text{-}dust}$ =	S $ELCR_{inh\text{-}dust}$
COC	EPC_{dust} EPC2 (mg/m³)	$LADE_{inh\text{-}dust}$ (µg/m³)	UR $(µg/m^3)^{-1}$	$ELCR_{inh\text{-}dust}$ (unitless)
1,1,1-Trichloroethane	5.1E-09	5.4E-09	NA	NC
1,1-Dichloroethane	5.1E-09	5.3E-09	1.6E-06	8.6E-15
1,2,3-Trichlorobenzene	4.4E-08	4.6E-08	NA	NC
1,2,4-Trichlorobenzene	4.6E-07	4.8E-07	NA	NC
1,2-Dichlorobenzene	1.3E-08	1.4E-08	NA	NC
1,2-Dichloroethane	1.6E-08	1.7E-08	2.6E-05	4.3E-13
1,3-Dichlorobenzene	1.3E-08	1.4E-08	NA	NC
1,4-Dichlorobenzene	1.5E-08	1.6E-08	6.9E-06	1.1E-13
2-Butanone	4.2E-08	4.4E-08	NA	NC
2-Chlorotoluene	4.5E-09	4.8E-09	NA	NC
Acetone	1.3E-07	1.3E-07	NA	NC
Benzene	1.3E-08	1.4E-08	7.8E-06	1.1E-13
Carbon Disulfide	3.6E-08	3.8E-08	NA	NC
Chlorobenzene	4.5E-09	4.8E-09	NA	NC
Chloroform	8.9E-09	9.4E-09	2.3E-05	2.2E-13
cis-1,2-Dichloroethene	5.9E-09	6.3E-09	NA	NC
Diethylether	4.8E-09	5.1E-09	NA	NC
Ethylbenzene	2.5E-08	2.6E-08	NA	NC
Methylene Chloride	2.3E-08	2.4E-08	1.0E-08	2.4E-16
Naphthalene	1.2E-06	1.3E-06	NA	NC
Tetrachloroethene	4.5E-09	4.8E-09	3.0E-06	1.4E-14
Toluene	2.2E-08	2.3E-08	NA	NC
Trichloroethene	1.6E-08	1.7E-08	5.0E-06	8.5E-14
Vinyl Chloride	8.2E-09	8.7E-09	8.8E-06	7.6E-14
Xylene (Total)	5.3E-08	5.6E-08	NA	NC
Styrene	6.0E-09	6.4E-09	5.7E-07	3.6E-15
1,2-Dichloropropane	4.7E-09	4.9E-09	1.9E-05	9.4E-14
1,2,3-Trichloropropane	4.5E-09	4.8E-09	NA	NC
1,4-Dioxane	1.6E-07	1.7E-07	5.0E-06	8.6E-13
2,4-Dimethylphenol	9.3E-07	9.8E-07	NA	NC
1-Methylnaphthalene	3.7E-06	3.9E-06	NA	NC
2-Methylnaphthalene	1.3E-06	1.4E-06	NA	NC
2-Methylphenol	9.3E-07	9.8E-07	NA	NC
4-Methylphenol	2.1E-06	2.3E-06	NA	NC
Acenaphthene	1.7E-06	1.8E-06	NA	NC
Acenaphthylene	1.1E-06	1.2E-06	NA	NC
Anthracene	2.7E-06	2.8E-06	NA	NC
Benzo(a)Anthracene	3.6E-06	3.8E-06	2.1E-04	7.9E-10
Benzo(a)Pyrene	2.6E-06	2.8E-06	2.1E-03	5.8E-09
Benzo(e)Pyrene	3.9E-06	4.1E-06	NA	NC
Benzo(b)Fluoranthene	3.2E-06	3.4E-06	2.1E-04	7.1E-10
Benzo(g,h,i)Perylene	1.5E-06	1.6E-06	NA	NC
Benzo(k)Fluoranthene	2.1E-06	2.2E-06	2.1E-05	4.7E-11
Bis(2-Ethylhexyl)phthalate	1.0E-03	1.1E-03	1.3E-06	1.4E-09
Butylbenzylphthalate	9.5E-07	1.0E-06	NA	NC
Chrysene	3.1E-06	3.2E-06	2.1E-05	6.7E-11
Dibenzo(a,h)anthracene	7.6E-07	8.0E-07	2.1E-03	1.7E-09
Dibenzofuran	1.4E-06	1.5E-06	NA	NC
Di-n-butylphthalate	9.3E-07	9.8E-07	NA	NC
Fluoranthene	7.6E-06	8.0E-06	NA	NC
Fluorene	1.8E-06	2.0E-06	NA	NC
Indeno(1,2,3-cd)Pyrene	1.5E-06	1.6E-06	2.1E-04	3.4E-10
Phenanthrene	7.4E-06	7.8E-06	NA	NC
Phenol	1.4E-06	1.5E-06	NA	NC
Pyrene	5.9E-06	6.2E-06	NA	NC
bis(2-Chloroethoxy)methane	9.4E-07	9.9E-07	NA	NC
Pentachlorophenol	3.8E-06	4.0E-06	1.0E-04	4.0E-10
3,3-Dichlorobenzidine	1.8E-06	1.9E-06	1.3E-04	2.5E-10
C11-C22 Aromatic Fraction	6.4E-04	6.7E-04	NA	NC
C19-C36 Aliphatic Fraction	9.3E-04	9.8E-04	NA	NC
C5-C8 Aliphatic Fraction	1.5E-05	1.6E-05	NA	NC
C9-C10 Aromatic Fraction	3.6E-05	3.8E-05	NA	NC
C9-C18 Aliphatic Fraction	9.5E-05	1.0E-04	NA	NC
4,4'-DDD	6.3E-09	6.7E-09	6.9E-05	4.6E-13
4,4'-DDE	7.3E-09	7.7E-09	9.7E-05	7.5E-13
4,4'-DDT	2.3E-08	2.4E-08	9.7E-05	2.3E-12
alpha-BHC	6.3E-09	6.6E-09	1.8E-03	1.2E-11
beta-BHC	6.3E-09	6.6E-09	5.3E-04	3.5E-12
Dieldrin	1.8E-08	1.9E-08	4.6E-03	8.7E-11
Endrin Ketone	6.4E-09	6.8E-09	NA	NC
gamma-BHC	6.3E-09	6.6E-09	3.7E-04	2.5E-12
Heptachlor Epoxide	9.1E-09	9.6E-09	2.6E-03	2.5E-11
Hexachlorobenzene	6.6E-09	7.0E-09	4.6E-04	3.2E-12
Methoxychlor	8.9E-09	9.4E-09	NA	NC
2,4-D	1.9E-07	2.0E-07	NA	NC
2,4,5-T	8.2E-08	8.6E-08	NA	NC
Dicamba	9.6E-08	1.0E-07	NA	NC
Aroclor - 1242	3.3E-07	3.5E-07	1.0E-04	3.5E-11
Aroclor - 1248	3.2E-07	3.4E-07	1.0E-04	3.4E-11
Aroclor - 1254	8.0E-07	8.4E-07	1.0E-04	8.4E-11
Aroclor - 1260	4.6E-06	4.9E-06	1.0E-04	4.9E-10
Aroclor - 1262	3.1E-07	3.3E-07	1.0E-04	3.3E-11
Aroclor - 1268	3.0E-07	3.1E-07	1.0E-04	3.1E-11
Antimony	7.0E-06	7.3E-06	NA	NC
Arsenic	7.5E-05	7.9E-05	3.0E-03	2.4E-07
Barium	1.0E-04	1.1E-04	NA	NC
Beryllium	3.4E-07	3.6E-07	2.4E-03	8.6E-10
Cadmium	2.5E-06	2.7E-06	1.8E-03	4.8E-09
Chromium (total)	3.8E-05	4.0E-05	1.2E-02	4.8E-07
Copper	1.4E-03	1.5E-03	NA	NC
Cyanide	1.8E-06	1.9E-06	NA	NC
Iron	1.1E-01	1.2E-01	NA	NC
Lead	1.1E-03	1.1E-03	NA	NC
Mercury	3.8E-06	4.0E-06	NA	NC
Nickel	3.2E-05	3.4E-05	4.8E-04	1.6E-08
Selenium	1.4E-05	1.4E-05	NA	NC
Silver	2.3E-06	2.5E-06	NA	NC
Thallium	4.4E-06	4.6E-06	NA	NC
Vanadium	6.8E-05	7.1E-05	NA	NC
Zinc	3.5E-04	3.7E-04	NA	NC
			Total $ELCR_{inh\text{-}dust}$:	**7.5E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

ATTACHMENT I

RISK LIMITATIONS

DRAFT

USE OF REPORT

1. GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the Client for the stated purpose(s) and location(s) identified in the Report. Use of this Report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. The interpretations and conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services. The work described in this report was carried out in accordance with the agreed upon Terms and Conditions.

4. GZA's risk characterization was performed in accordance with generally accepted practices of qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. The findings of the risk characterization are dependent on numerous assumptions and uncertainties inherent in the risk assessment process. Sources of uncertainty may include the description of site conditions, the nature and extent of chemical distribution and the reliability of toxicity information. Consequently, the findings of the risk characterization are not an absolute characterization of actual risks, but rather serve to highlight potential sources of risk at the site. Although the range of uncertainties has not been quantified, the use of conservative assumptions and parameters throughout the assessment would be expected to err on the side of protection of human health and the environment.

RELIANCE ON INFORMATION FROM OTHERS

5. In conducting our work, GZA has relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Any inconsistencies in this information which we have noted are discussed in the Report.

ADDITIONAL INFORMATION

6. In the event that the Client, or others authorized to use this Report, obtain information on environmental or hazardous waste issues at the site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

COMPLIANCE WITH CODES AND REGULATIONS

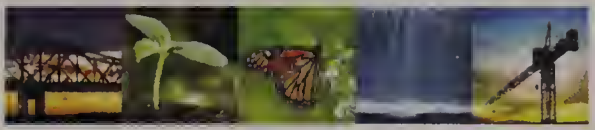
7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations with codes and regulations by other parties are beyond our control.

DRAFT

DRAFT

APPENDIX G

IMMEDIATE RESPONSE ACTION (IRA) PLAN



GZA

Proactive by Design

GEOTECHNICAL
ENVIRONMENTAL
ECOLOGICAL
WATER
CONSTRUCTION MANAGEMENT

249 Vanderbilt Avenue
Norwood, MA 02062
T 781.278.3700
F 781.278.5701
F 781.278.5702
www.gza.com

February 5, 2016
GZA File No: 01.00171521.42

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
Northeast Regional Office
205B Lowell Street
Wilmington, Massachusetts 01887

Re: Prospective Immediate Response Action Plan
Construction-Related Activities
Wynn Everett Resort and Casino
1 Horizon Way
Everett, Massachusetts

To Whom It May Concern:

GZA GeoEnvironmental, Inc. (GZA), on behalf of Wynn MA, LLC (Wynn MA), has prepared this Immediate Response Action (IRA) Plan to describe response actions that may be taken pursuant to Section 40.0410 of the Massachusetts Contingency Plan (MCP) during the construction of the Wynn Resort and Casino at the above-referenced property.

The property is listed as Release Tracking Number (RTN) 3-13341 and has been designated as a Public Involvement Plan (PIP) Site in accordance with Section 40.1404 of the MCP. This IRA Plan has been developed to comply with the public involvement requirements of the MCP while not creating unnecessary delays to a major construction project. If IRA conditions (i.e., conditions requiring 2-hour or 72-hour notification pursuant to Section 40.0300 of the MCP) are encountered during construction, MCP response actions will proceed in accordance with this plan. While observations to date have not indicated any such conditions within the footprint of the construction area, the history of Site use and our observations during the ongoing Release Abatement Measure (RAM) activities indicate that one or more IRA conditions may be encountered during the planned major excavation at the Site.

This IRA Plan has been prepared in accordance with 310 CMR 40.0424 of the MCP, and with the Limitations in Appendix A.

EXECUTIVE SUMMARY

This IRA Plan has been developed to be protective of public health and the environment, and to comply with the public involvement requirements of the MCP, while not creating unnecessary delays to an on-going construction project. If IRA conditions (i.e., conditions requiring 2-hour or 72-hour notification pursuant to Section 40.0300 of the MCP) are encountered during construction, MCP response actions will proceed in accordance with this plan. In general, the IRA Plan calls for: 1) oral notification to MassDEP within the appropriate timeframe; 2) obtaining oral approval from MassDEP for addressing the IRA condition during on-going construction activities; 3) written notification to parties on the PIP distribution list of the IRA condition and the response actions begin taken; and 4) if requested, a public meeting under the provisions of the PIP for the Site in conjunction with the filing of an IRA Completion Report.

DRAFT

An Equal Opportunity Employer M/F/V/H

IRA PLAN

The following sections provide IRA Plan information in accordance with 310 CMR 40.0424.

THE NAME, ADDRESS, TELEPHONE NUMBER AND RELATIONSHIP TO THE SITE OF THE PERSON ASSUMING RESPONSIBILITY FOR CONDUCTING THE IMMEDIATE RESPONSE ACTION [310 CMR 40.0424(1)(a)]:

The entity assuming responsibility for IRA response actions will be Wynn MA, LLC. Information for Wynn MA's contact person is provided below:

Mr. Robert DeSalvio
President
Wynn MA, LLC
101 Station Landing, 2nd Floor
Medford, Massachusetts 02155
Tel: 857-770-7801

DESCRIPTION OF RELEASE, SITE CONDITIONS AND SURROUNDING RECEPTORS [310 CMR 40.0424(1)(b)]

The following sections provide a description of the property and surrounding area conditions, and a description of potential release conditions.

SITE AND SURROUNDING AREA CONDITIONS

The property is the location of the future Wynn Resort and Casino ("the property;") in Everett, Massachusetts. Access to the property is limited by the presence of a chain-link fence with security gates. The ground surface at the property is generally bituminous pavement, unpaved, or compacted coarse gravel. The property is generally level with a gentle slope toward the southwest. Based on an April 2013 survey prepared by Harry R. Feldman, Inc. (Professional Land Surveyors), ground surface elevations on the property range from approximately 8 to 13 feet NAVD88.

The property is adjoined to the northeast by a vehicle maintenance and repair facility operated by the Massachusetts Bay Transportation Authority (MBTA); to the southeast by properties along Alford Street, including a vacant commercial building and facilities operated by the Boston Water and Sewer Commission (BWSC) and the Massachusetts Water Resources Authority (MWRA); to the southwest by the Mystic River; and to the northwest by railroad tracks for the MBTA Commuter Rail, beyond which are several large commercial/retail buildings associated with Gateway Center.

The property is located within the Boston Basin, a regional depression of bedrock consisting primarily of Cambridge Argillite, a partially metamorphosed siltstone. Property conditions generally consist of fill over a variable sequence of naturally deposited organics, sand and gravel, and silty clay over weathered rock and bedrock. Filling over naturally deposited materials occurred in the area of the property from the late 1800s through the early 1960s. More recent naturally deposited sediments along the shoreline include sand, silt, and organics. During the mid-1990s, rock and fine-grained sediment ("tunnel muck") from the construction of the Deer Island Outfall was stockpiled on the Site, and later spread out in a 1- to 7-foot thick layer.

Depth to groundwater at the property ranges from approximately 4 to 10 feet. Groundwater at the property flows generally toward the east on the southern portion of the property and generally toward the south on the northern portion of the property.

According to the Massachusetts Geographic Information System (MassGIS) map, the property is not located in or within 500 feet of a Zone II public water supply, a potentially productive aquifer, a Zone A surface water body, an Interim Wellhead Protection Area, a protected wetlands habitat, or an Area of Critical Environmental Concern. Protected open space associated with Gateway Park is located approximately 400 feet to the northwest of the property.

DRAFT

DRAFT

RELEASE HISTORY

As previously indicated, this IRA Plan covers potential MCP 2-hour and 72-hour Reportable Conditions. For convenience, the sections of 40.0300 which list these conditions are attached as Appendix B. Examples of these conditions that are most likely to be encountered on the Site include:

1. A sudden, continuous or intermittent release of OHM greater than an MCP Reportable Quantity or that results in a sheen on surface water (e.g., a leak of hydraulic oil from a piece of heavy equipment);
2. The detection of over ½ inch of non-aqueous phase liquid (NAPL) in a groundwater monitoring well, excavation or subsurface structure (e.g., oil from a buried tank); and
3. Elevated photoionization detector readings measured during the removal of an underground storage tank (UST).

A DESCRIPTION OF THE IMMEDIATE RESPONSE ACTIONS UNDERTAKEN TO DATE AT THE SITE [310 CMR 40.0424(1)(c)]

IRA activities have previously been conducted at the Site under RTN 3-33284. That RTN was generated on November 25, 2015, after field screening indicated elevated PID readings for soil samples collected from adjacent to an abandoned UST at the Site. An IRA Plan was submitted to MassDEP for this RTN in January 2016. IRA activities conducted to date under RTN 3-33284 have included the removal and off-Site disposal of the UST and its contents. Additional IRA activities for this RTN, including the removal of impacted soil and/or groundwater, will be conducted at a later date.

THE REASON WHY AN IMMEDIATE RESPONSE ACTION IS REQUIRED [310 CMR 40.0424(1)(d)]

The IRA will be required to address 2-hour or 72-hour release reporting conditions encountered during construction activities at the Site.

OBJECTIVE, PLAN, AND SCHEDULE [310 CMR 40.0424(1)(e)]

The objective of the IRA will be to address the conditions that prompted the need for the IRA through appropriate response actions under the MCP. IRA activities would be undertaken immediately after notification to MassDEP and oral approval by MassDEP of such IRA activities. Based on the nature of the conditions triggering the IRA, activities conducted under this plan are expected to take anywhere from several hours to several days to complete.

Potential IRA activities include the following:

For a sudden, continuous or intermittent release to soil of a quantity of OHM greater than its MCP Reportable Quantity:

- Assess the source of the release and take any steps necessary to stop the release;
- Assess the nature and volume of the OHM released;
- Apply adsorbents or other spill control measures to collect OHM;
- Excavate and stockpile soil visually impacted by the release for future off-site disposal;
- Collect confirmatory soil samples for laboratory analysis to confirm the removal of the IRA condition. Laboratory analytical methods will be appropriate to assess the OHM involved; and
- If visual, field screening or laboratory evidence suggests the need to assess groundwater conditions, and the groundwater is not otherwise being managed by construction-related RAM activities, install one or more groundwater monitoring wells and collect groundwater samples for laboratory analysis.

For a sudden, continuous or intermittent release of oil or waste oil that results in a sheen on surface water:

- Assess the source of the release and take any steps necessary to stop the release;
- Assess the type and volume of oil released;
- Apply adsorbents, booms or other spill control measures to collect OHM;
- Excavate visually-impacted sediment and/or soil along the shoreline for future off-site disposal; and
- Collect confirmatory surface water, soil and/or sediment samples for laboratory analysis. Laboratory analytical methods will be appropriate to assess the OHM.

For the detection of greater than ½ inch thickness of NAPL in a groundwater monitoring well, excavation or subsurface structure:

- Collect NAPL via absorbents, vacuum excavation, hand-bailing or other means, as appropriate;
- Excavate and stockpile soil visually identified as having significant NAPL impacts for future off-site disposal;
- Collect confirmatory soil samples for laboratory analysis from the final extent of excavation. Laboratory analytical methods should be appropriate to assess the NAPL; and
- If visual, field screening or laboratory evidence suggests the need to assess groundwater conditions, and the groundwater is not otherwise being managed by construction-related RAM activities, install one or more groundwater monitoring wells and collect groundwater samples for laboratory analysis.

If field screening results for soils samples collected during a UST removal, and within the proximity of the UST as described in 40.0313(2), are at or above 100 parts ppmv:

- Assess the former contents of the UST;
- Excavate and stockpile soil visually identified as having significant NAPL impacts for future off-site disposal;
- Collect confirmatory soil samples for laboratory analysis from the final extent of excavation. Laboratory analytical methods will be appropriate to assess the OHM; and
- If visual, field screening or laboratory evidence suggests the need to assess groundwater conditions, and the groundwater is not otherwise being managed by construction-related RAM activities, install one or more groundwater monitoring wells and collect groundwater samples for laboratory analysis.

It is expected that at the conclusion of IRA activities discussed above, an IRA Completion Report will be generated, the RTN for the IRA will be linked to the RTN for the larger property, and any further MCP Response Actions in the IRA area will be conducted under RTN 3-13341.

STATEMENT REGARDING REMEDIATION WASTE [310 CMR 40.0424(1)(f)]

Impacted soil and/or groundwater encountered during IRA activities will be handled in accordance with the soil and groundwater management plan attached as Appendix E of this Release Abatement Measure (RAM) Plan. Other impacted media, such as used absorbent materials, PPE, etc., will be containerized and characterized for appropriate off-site disposal. The details of the management of IRA remediation waste will be incorporated into the IRA Completion Report.

ENVIRONMENTAL MONITORING PLAN [310 CMR 40.0424(1)(g)]

During the IRA activities, work zone air monitoring will be conducted based on the nature of the OHM released. GZA expects that, at a minimum, work zone air monitoring will include screening for concentrations of total VOCs using a PID. Additionally, IRA activities involving the handling of soil will include screening for PM10 dust using a dust meter. This work will be performed under the existing site-specific Health and Safety Plan prepared for RAM work under RTN 3-13341.

DRAFT

We do not anticipate that an environmental monitoring plan will be required for the condition which gave rise to the IRA upon completion of the IRA activities.

FEDERAL, STATE AND/OR LOCAL PERMITS [310 CMR 40.0424(1)(h)]

Underground storage tank removals will require the appropriate permits from the Everett Fire Department.

Bills of Lading and/or waste manifests will be prepared prior to transporting remedial wastes for off-site disposal.

Construction at the Site is being conducted under a Wetlands Protection Act (WPA) Order of Conditions (OOC, MassDEP File # 022-0098) and a MassDEP Waterways Program Chapter 91 Written Determination (W15-4480-N).

GZA did not identify additional permit requirements for this work.

SEAL AND SIGNATURE OF LSP [310 CMR 40.0424(1)(i)]

The LSP seal and signature are provided on the BWSC-105 transmittal form included in Appendix A.

OTHER INFORMATION [310 CMR 40.0424(1)(j)]

Other information was not identified that would be deemed appropriate for review by MassDEP in connection with this IRA Plan.

Please feel free to contact any of the undersigned at (781) 278-3700 if you have any questions or require additional information.

GZA GEOENVIRONMENTAL, INC.

David E. Leone
Senior Project Manager

Albert J. Ricciardelli
Consultant/Reviewer

Lawrence Feldman, LSP
Senior Principal

Attachments: Appendix A – Limitations
Appendix B – MCP Citations

DRAFT

DRAFT

APPENDIX A

LIMITATIONS

USE OF REPORT

1. GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Proposal for Services and/or Report and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. Specifically, GZA does not and cannot represent that the Site contains no hazardous material, oil, or other latent condition beyond that observed by GZA during its study. Additionally, GZA makes no warranty that any response action or recommended action will achieve all of its objectives or that the findings of this study will be upheld by a local, state or federal agency.

4. In conducting our work, GZA relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Inconsistencies in this information which we have noted, if any, are discussed in the Report.

SUBSURFACE CONDITIONS

5. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs. The nature and extent of variations between these explorations may not become evident until further exploration or construction. If variations or other latent conditions then become evident, it will be necessary to reevaluate the conclusions and recommendations of this report.

6. Water level readings have been made, as described in this Report, in and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The observed water table may be other than indicated in the Report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations and compliance with codes and regulations by other parties is beyond our control.

DRAFT

SCREENING AND ANALYTICAL TESTING

8. GZA collected environmental samples at the locations identified in the Report. These samples were analyzed for the specific parameters identified in the report. Additional constituents, for which analyses were not conducted, may be present in soil, groundwater, surface water, sediment and/or air. Future Site activities and uses may result in a requirement for additional testing.

9. Our interpretation of field screening and laboratory data is presented in the Report. Unless otherwise noted, we relied upon the laboratory's QA/QC program to validate these data.

10. Variations in the types and concentrations of contaminants observed at a given location or time may occur due to release mechanisms, disposal practices, changes in flow paths, and/or the influence of various physical, chemical, biological or radiological processes. Subsequently observed concentrations may be other than indicated in the Report.

INTERPRETATION OF DATA

11. Our opinions are based on available information as described in the Report, and on our professional judgment. Additional observations made over time, and/or space, may not support the opinions provided in the Report.

ADDITIONAL INFORMATION

12. In the event that the Client or others authorized to use this report obtain additional information on environmental or hazardous waste issues at the Site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

ADDITIONAL SERVICES

13. GZA recommends that we be retained to provide services during any future investigations, design, implementation activities, construction, and/or property development/ redevelopment at the Site. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.

CONCEPTUAL SITE MODEL

14. Our opinions were developed, in part, based upon a comparison of site data to conditions anticipated within our Conceptual Site Model (CSM). The CSM is based on available information, and professional judgment. There are rarely sufficient data to develop a unique CSM. Therefore observations over time, and/or space, may vary from those depicted in the CSM provided in this report. In addition, the CSM should be evaluated and refined (as appropriate) whenever significant new information and/or data is obtained.

RISK CHARACTERIZATION

15. Our risk evaluation was performed in accordance with generally accepted practices of appropriate Federal and/or state regulatory agencies, and of other consultants undertaking similar studies at the same time, for similar purposes, and under similar circumstances. The findings of the risk evaluation are dependent on the numerous assumptions and uncertainties inherent in the risk characterization process. Sources of the uncertainty may include Site conditions; Site use; the nature, extent, concentration and distribution of contaminants; and the available toxicity and/or health/risk based regulatory information. Consequently, the findings of the risk characterization are not an absolute

DRAFT

characterization of actual risks; but rather serve to highlight potential incremental risks associated with activities indicated in the Report. Actual risks may be other than indicated in the Report.

DRAFT

DRAFT

APPENDIX B

MCP CITATIONS

40.0311: Releases Which Require Notification Within Two Hours

Except as provided in 310 CMR 40.0317 or 40.0332(1) or (7), persons required to notify under 310 CMR 40.0331 shall notify the Department as soon as possible but not more than two hours after obtaining knowledge that a release meets one or more of the following sets of criteria:

(1) a sudden, continuous or intermittent release to the environment of any hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, when:
   (a) the quantity of the release is equal to or greater than the applicable Reportable Quantity specified at 310 CMR 40.0352 or 40.1600; and
   (b) it is likely that the release occurred within any period of 24 consecutive hours or less;

(2) a sudden, continuous or intermittent release to the environment of any hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, when:
   (a) the quantity of the release is unknown;
   (b) it is likely that the quantity of the release is equal to or greater than the applicable Reportable Quantity specified at 310 CMR 40.0352 or 40.1600; and
   (c) it is likely that the release occurred within any period of 24 consecutive hours or less;

(3) a sudden, continuous or intermittent release to the environment of oil that is listed at 310 CMR 40.1600 when:
   (a) the quantity of the release is equal to or greater than the applicable Reportable Quantity specified at 310 CMR 40.0351 or 40.1600; and
   (b) it is likely that the release occurred within any period of 24 consecutive hours or less;

(4) a sudden, continuous or intermittent release to the environment of oil that is listed at 310 CMR 40.1600, when:
   (a) the quantity of the release is unknown;
   (b) it is likely that the quantity of the release is equal to or greater than the applicable Reportable Quantity specified at 310 CMR 40.1600; and
   (c) it is likely that the release occurred within any period of 24 consecutive hours or less;

(5) a sudden, continuous or intermittent release to the environment of any quantity of oil or waste oil that is listed at 310 CMR 40.1600 that results in the appearance of a sheen on surface water;

(6) a release to the environment indicated by the measurement of oil and/or hazardous material in a private drinking water supply well at concentrations equal

DRAFT

to or greater than a Category RCGW-1 Reportable Concentration, as described in 310 CMR 40.0360 through 40.0369 and listed at 310 CMR 40.1600;

(7) any release of any oil and/or hazardous material, in any quantity or concentration, that poses or could pose an Imminent Hazard, as described in 310 CMR 40.0321 and 40.0950;

(8) any release of oil and/or hazardous material described in 310 CMR 40.0311(1) through (4) or 40.0311(7) that is indirectly discharged to the environment by means of discharge to a stormwater drainage system;

(9) any release of oil and/or hazardous material described in 310 CMR 40.0311(7) that is indirectly discharged into the environment by means of discharge to a sanitary sewerage system.

40.0312: Threats of Release Which Require Notification Within Two Hours

Except as provided in 310 CMR 40.0317 or 40.0332(1) or (7), persons required to notify under 310 CMR 40.0331 shall notify the Department as soon as possible but not more than two hours after obtaining knowledge that a threat of release meets one or more of the following sets of criteria:

(1) a threat of release to the environment of oil and/or hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, when:
  (a) it is likely that the release threatened is about to occur; and
  (b) it is likely that the quantity of the release, if it occurred, would be equal to or greater than the applicable Reportable Quantity specified at 310 CMR 40.0351, 40.0352 or 40.1600; or

(2) a threat of release to the environment of oil and/or hazardous material that is listed at 310 CMR 40.1600 or that exhibits one or more of the characteristics described in 310 CMR 40.0347, which poses or could pose an Imminent Hazard, as described in 310 CMR 40.0321, irrespective of the quantity likely to be released.

40.0313: Releases Which Require Notification Within 72 Hours

Except as provided in 310 CMR 40.0317 or 40.0332(7), persons required to notify under 310 CMR 40.0331 shall notify the Department not more than 72 hours after obtaining knowledge that a release of oil and/or hazardous material(s) meets one or more of the following sets of criteria:

(1) a release to the environment indicated by the presence of Nonaqueous Phase Liquid (NAPL) in a groundwater monitoring well, excavation, or subsurface structure in which NAPL has come to be located at a measured thickness equal to

DRAFT

or greater than ½ inch (0.04 feet) at a location greater than 30 feet from School, Daycare or Child Care Center or occupied Residential Dwelling;

(2) a release to the environment indicated by the presence of oil and/or hazardous material within ten feet of the exterior wall of an underground storage tank, as established by measurement of equal to or greater than 100 parts-per-million (ppm) by volume of total organic vapors "as benzene" in the headspace of a soil or groundwater sample using a headspace screening method, and where such sample was obtained:

(a) greater than two feet below the ground surface; and

(b) as part of a closure assessment required pursuant to 527 CMR 9.00: *Tanks and Containers* and 40 CFR Parts 280 and 281, or in connection with the removal or closure of an underground storage tank otherwise regulated by M.G.L. c. 148 or 527 CMR 9.00: *Tanks and Containers*;

(3) a release to the environment indicated by the measurement of oil and/or hazardous material in the groundwater at concentrations equal to or greater than a Category RCGW-1 Reportable Concentration, as described in 310 CMR 40.0360 through 40.0369 and listed at 310 CMR 40.1600, within:

(a) the Zone I of a public water supply well; or

(b) 500 feet of a private water supply well; or

(4) a Condition of Substantial Release Migration, where such condition is associated with a release for which notification otherwise is or has at any time in the past been required in accordance with 310 CMR 40.0300. A Condition of Substantial Release Migration means a condition at a disposal site that includes any of the following:

(a) releases that have resulted in the discharge of separate-phase oil and/or separate-phase hazardous material to surface waters, buildings, or underground utilities or conduits;

(b) releases to the ground surface or to the vadose zone that, if not promptly removed or contained, are likely to significantly impact the underlying groundwater, or significantly exacerbate an existing condition of groundwater pollution;

(c) releases to the groundwater that have migrated or are expected to migrate more than 200 feet per year;

(d) releases to the groundwater that have been or are within one year likely to be detected in a public or private water supply well;

(e) releases to the groundwater that have been or are within one year likely to be detected in a surface water body, wetland, or public water supply reservoir; or

(f) releases to the groundwater or to the vadose zone that have resulted or have the potential to result in the discharge of vapors into a School, Daycare or Child Care Center or occupied Residential Dwelling. Conditions that indicate a potential discharge of vapors into a School, Daycare or Child Care Center or occupied Residential Dwelling include, but are not limited to:

1. soil or soil gas impacted with one or more volatile organic compounds within six feet, measured horizontally from the wall of the structure, and within ten feet measured vertically from the basement floor or foundation at concentrations that are likely to discharge vapors into the structure;
2. one or more volatile organic compound in the groundwater exceed the applicable Groundwater Category GW-2 Standard within 30 feet of the structure, and the average annual depth to groundwater in that area is 15 feet or less;
3. volatile light non-aqueous phase liquid (LNAPL) is present in a groundwater monitoring well, excavation, or subsurface depression within 30 feet of the structure at a measured thickness equal to or greater than 1/8 inch (0.01 feet); or
4. evidence of vapor migration along preferential pathways at a location that is likely to result in the discharge of vapors into the structure.

40.0314: Threats of Release Which Require Notification Within 72 Hours

Except as provided in 310 CMR 40.0317, persons required to notify under 310 CMR 40.0331 shall notify the Department not more than 72 hours after obtaining knowledge of a threat of release of oil and/or hazardous material to the environment from an Underground Storage Tank, as established by a test conducted in conformance with the methodology prescribed for that test which indicates there is a substantial likelihood of a leak equal to or greater than 0.05 gallons per hour:

(1) in a single walled Underground Storage Tank;

(2) in the inner wall of a double-walled Underground Storage Tank; or

(3) in the outer wall of a double-walled Underground Storage Tank.

DRAFT

GZA

Proactive by Design

APPENDIX H

FOCUSED RISK ASSESSMENT

DRAFT

DRAFT

GZA GeoEnvironmental, Inc. (GZA) has prepared a focused risk assessment to support the Release Abatement Measure (RAM) Plan GZA is submitting for the former Everett Staging Yard located at 1 Horizon Way, Everett, Massachusetts. The former Everett Staging Yard disposal site (the "Site") is listed with the Massachusetts Department of Environmental Protection (MassDEP) as Release Tracking Number (RTN) 3-13341. The focused risk assessment was prepared to meet the requirements of the MCP as described in the MassDEP guidance document, *Construction of Buildings in Contaminated Areas* (WSC-00-425) dated January 26, 2000.

This is the second RAM being conducted at the Site. The initial RAM, dated August 18, 2015, addressed the three areas of the Site (the A-5 Area, the CES-2 Area, and the Low pH Area) that had been most impacted by prior Site uses and activities. The Plan for this second RAM (the "construction RAM") is being submitted to describe the procedures that will be implemented to manage contaminated soil, groundwater, and sediment during the construction of the Wynn Resort and Casino. The RAM work will involve the earthwork associated with buildings, roadways, walkways and landscaping on the Site, the construction of a harbor walk and living shoreline around the land-side portion of the Site, and dredging associated with an existing navigational channel in the cove adjacent to the Site.

Work being conducted on the land-side portion of the Site is consistent with the Recommended Remedial Action Alternative (RRAA) presented in the Phase III report for the Site filed by GEI Consultants on August 27, 2013. The RRAA presented in that report for the water-side portion of the Site was "further assessment and monitoring;" however, as described in the Environmental Impact Report for the Wynn project, additional work is being conducted to evaluate the need for and scope of more active remedial response actions to address the sediment contamination within the cove. A Supplemental Phase II report addressing the sediment contamination was submitted to MassDEP on December 31, 2015, and a Supplemental Phase III report will be submitted on or before June 30, 2016.

The objective of the MassDEP (2000) guidance is to require the proponent of a pre-construction RAM to demonstrate that: (1) the construction of the building will not pose a Significant Risk to workers constructing the building, surrounding populations, or future building occupants; and (2) necessary future remedial actions will not be limited or precluded by the presence of the building. As noted above, the work to be conducted under the construction RAM is consistent with the operative RRAA for the land-side portion of the Site, and the limited dredging conducted as part of the construction RAM will not interfere with future remedial dredging should it be necessary. In addition, residual concentrations of oil and/or hazardous material (OHMs) at the Site are not expected to pose significant risks to future building occupants as discussed in Section 1.00 of this focused risk assessment. Accordingly, this risk assessment focuses primarily on the construction-related risks associated with the implementation of the RAM.

The results of this focused risk assessment (as shown in Table H-1) indicate that residual concentrations of OHMs in soil, groundwater, sediment, and surface water at the Site do not pose significant health risks to construction workers. This focused risk assessment was conducted subject to the limitations included in Attachment I.

1.0 RECEPTORS AND EXPOSURE PATHWAYS

As part of this focused risk assessment, GZA evaluated risks to construction workers who will be conducting the response actions at the Site. Risks to other potential human receptors during the RAM work and after the Site redevelopment were not quantitatively evaluated in this focused risk assessment for the reasons summarized below.

1.1 RECEPTORS DURING RAM WORK

Potential receptors during the RAM work include construction workers, Site visitors/trespassers, and surrounding populations.

The Site is a fenced construction site with full-time security, so that trespassing will occur rarely, if at all. Neither trespassers nor Site visitors during the RAM work will have more exposure than construction workers. Therefore, if a condition of No Significant Risk (NSR) exists for the construction worker group, then a condition of NSR would also exist for Site trespassers and visitors, if any, during the RAM work.

Surrounding populations could potentially be exposed to dust produced during the RAM work; however, surrounding populations are not expected to have more exposure than construction workers. Therefore, if a condition of NSR exists for the construction worker group, then a condition of NSR would also exist for surrounding populations. Moreover, the perimeter dust monitoring and dust control program in effect for the initial RAM will be maintained for the construction RAM to ensure NSR to surrounding populations[1].

1.2 POST-REDEVELOPMENT SITE RECEPTORS

The Site redevelopment includes the construction of a building covering the majority of the upland portion of the Site. Much of the building will be constructed over a 3-story, subgrade parking garage structure. Approximately 25 to 30 feet of soil within the proposed building and garage footprint will be excavated for the construction of the garage and foundation, thereby removing the contaminated fill within the footprint area. Upon completion of RAM activities and construction, those portions of the Site not covered by the building will be covered by roadways, paved pathways or landscaping, underlain by clean fill to minimize potential future exposures. Utility trenches will be backfilled with clean fill to create "clean corridors." An Activity and Use Limitation (AUL) will be placed at the Site to maintain these conditions, and to prohibit disturbance of subsurface soils without a soil management plan and health and safety plan. With the AUL in place, soil will not be accessible by future receptors such as industrial/commercial workers, landscapers, or Site visitors/customers.

Post-redevelopment construction workers and emergency utility workers could be exposed to residual OHMs in impacted media; however, the post-RAM levels in impacted media would be no higher than the pre-RAM levels. If a condition of NSR could be demonstrated for construction workers during the RAM, then a condition of NSR would also exist for post-development construction workers and emergency/utility workers.

Approximately 2 to 12 feet of sediment is planned to be dredged from the navigation channel and disposed off-Site. As described in the Supplemental Phase II report, the sediment contamination does not currently represent a Significant Risk to human health; post-dredging sediment conditions, which will render sediment in the navigation channel even less available for direct contact, will not change this condition.

Based on the above discussion, in conducting this risk assessment GZA focused on evaluating risks to construction workers during the earthwork phase of the construction of the Wynn Resort and Casino. Construction workers working in the upland area were assumed to be exposed to contaminants in soil via dermal contact, incidental ingestion, and inhalation of soil-derived dust, as well as to residual OHM in groundwater via dermal contact and inhalation of ambient air potentially impacted by groundwater. Construction workers working in the coastal area were assumed to be exposed to contaminants in sediment via dermal contact and incidental ingestion and to residual OHM in surface water via dermal contact.

2.0 HAZARD IDENTIFICATION AND EXPOSURE POINT CONCENTRATIONS

All available soil, groundwater, sediment, and surface water results collected from the proposed RAM area during previous studies performed were reviewed in this focused risk assessment, and those considered representative of the conditions that

---

[1] The perimeter dust target level is a risk-based PM10 level established to ensure NSR to surrounding populations including commercial/industrial workers and residents (see Appendix F of the RAM Plan).

DRAFT

will be encountered by construction workers during the RAM were used to derive exposure point concentrations (EPCs) for this focused risk assessment.

2.1 DATA USED IN FOCUSED RISK ASSESSMENT

2.1.1 Soil

The soil analytical results evaluated in this focused risk assessment include the soil data presented in the Phase III report (Table H-2) prepared by GEI Consultants, Inc. (GEI) and submitted on August 27, 2013, and the pre-characterization data collected in 2014-2015 (Appendix D). Some specific considerations are presented below:

For the soil data included in the Phase III report (hereafter referred to as the Phase III data):

1. The data collected from A-5 Area (i.e., yellow-highlighted in Table H-2) were not included in this focused risk assessment to identify contaminants of concern (COCs) for soil, nor were they used to derive soil EPCs. Similarly, the results of three soil samples collected at A-5 (A-5@6', A-5@8', and TP A-5 8') were not used to derive soil EPCs for this focused risk assessment. This soil has been removed under the August 18, 2015, RAM.
2. The results of the soil samples collected from top 4 feet of soil within the Low pH Area (i.e., green-highlighted in Table H-2) were used to derive soil EPCs for this focused risk assessment. Associated soil was excavated prior to treatment of the underlying area under the August 18, 2015 RAM, and will be re-used within the same general depth range at the Site. The other data from the Low pH Area were not used to derive soil EPCs, since this soil was stabilized as part of the initial RAM.
3. The results of the soil samples collected from within 6 feet of soil in the CES-2 Area (i.e., red-highlighted in Table H-2) were used to derive soil EPCs for this focused risk assessment. Associated soil was excavated prior to the excavation and off-Site disposal of underlying soils under the August 18, 2015 RAM, and will be re-used within the same general depth range at the Site. The other data from the High Arsenic Area were not used to derive soil EPCs.
4. All the other data included in Table H-2 were included for the soil EPC derivation.

A statistical summary of the Phase III soil data used for the soil EPC derivation is presented in Table H-3.

For the pre-characterization data collected after the submittal of the Phase III report, only the data associated with the soil samples collected from within the RAM excavation limits were included for the soil EPC derivation. The gray-highlighted results in the Appendix D table were not quantitatively used in the focused risk assessment as associated soil lies deeper than the construction RAM work limit. A statistical summary of the pre-characterization data used for the soil EPC derivation is presented in Table H-4.

A statistical summary of all the data used for the soil EPC derivation (a combination of Tables H-3 and H-4) is listed in Table H-5.

2.1.2 Groundwater

The groundwater analytical results evaluated in this focused risk assessment include the groundwater data presented in the Phase III report and the recent data collected in 2014 and 2015 (Table H-6). Some specific considerations are presented below:

1. The green-highlighted groundwater results in Table H-6 were not used to identify groundwater COCs or derive groundwater EPCs. Soils in these areas were either removed or stabilized during the initial RAM work.

DRAFT

2. Multiple rounds of samples (gray-highlighted in Table H-6) were collected from various groundwater monitoring wells at the Site. Temporal averages were calculated for each well with multiple rounds of results, and the temporal averages were used to represent the levels for each monitoring well. If an analyte was not detected during any sampling round, the temporal average was presented as a non-detect and the lowest laboratory reporting limit (RL) among the multiple rounds was used to represent the RL for the temporal average. When an analyte was detected in at least one round, half the RL was used for any non-detect for the temporal average calculation.

3. One pair of groundwater field duplicate samples was available for the Site (yellow-highlighted in Table H-6). The duplicate pair was averaged to represent the conditions for that sample location.

All the other data included in Table H-6 were included for the groundwater EPC derivation. A statistical summary of the groundwater data used for the groundwater EPC derivation is listed in Table H-7.

2.1.3 Sediment

The sediment analytical results evaluated in this focused risk assessment include the sediment data collected on July 31, 2013 (Table H-8). All sediment results in Table H-8 were used to identify sediment COCs and consequently to derive sediment EPCs[2].

It should be noted that 2-methyl-4-chlorophenoxyacetic acid (MCPA) and 2-(2-methyl-4-chlorophenoxy)propionic acid (MCPP) were originally reported as detected in certain sediment samples by ESS Laboratory (ESS). GZA submitted split samples of Sample Comp GZ-1 2 3B to two other laboratories (Alpha Analytical and Spectrum Analytical) and both laboratories concluded that no MCPP or MCPA was present in any of the samples. ESS later acknowledged that the MCPP and MCPA detections were false positives and re-ran the analyses for MCPP and MCPA by Gas Chromatography/Mass Spectrometry (GC/MS); neither MCPP nor MCPA was detected in these re-analyses. ESS issued the revised laboratory reports on October 3, 2013. The revised results are listed in Table H-8 and are used in this focused risk assessment.

A statistical summary of the data used for the sediment EPC derivation is listed in Table H-9.

2.1.4 Surface Water

The surface water analytical results evaluated in this focused risk assessment include the surface water data collected in May 2015 (Table H-10). All surface water results in Table H-10 were used to identify surface water COCs and consequently to derive surface water EPCs.

2.2 SELECTION OF CONSTITUENTS OF CONCERN

Constituents of concern are those constituents that are both identified at the Site and associated with a release of OHM. Unless specific justification can be provided for eliminating a constituent from the risk characterization, all constituents detected in each environmental medium at a site are considered to be COCs, and are carried through the risk characterization process.

2.2.1 Background

The maximum detected concentration of manganese in soil was below the background concentration published by MassDEP (2002c) for "Natural" soil (49 mg/kg vs. 300 mg/kg). In addition, there is no evidence that the manganese levels in Site soil are related to Site releases. As a result, manganese was excluded as a soil COC based on the comparison to the MassDEP (2002c) published background concentration.

DRAFT

---

[2] Sediment associated with all the samples is expected to be removed during the RAM work.

No other detected constituents were excluded as COCs based on the background comparison.

2.2.2 C_9-C_{12} Aliphatics and C_9-C_{18} Aliphatics

Soil and groundwater samples were analyzed via both the MassDEP Extractable Petroleum Hydrocarbon (EPH) and Volatile Petroleum Hydrocarbon (VPH) methods. The EPH method reports results for C_9-C_{18} aliphatics hydrocarbon and the VPH method reports results for C_9-C_{12} aliphatics hydrocarbon. GZA has retained the C_9-C_{18} aliphatic hydrocarbon fraction as a COC for soil and groundwater to avoid redundancy and has adopted the higher of the concentrations calculated for the two fractions as the EPC for this COC.

2.2.3 Total Petroleum Hydrocarbon

Both Total Petroleum Hydrocarbon (TPH) and EPH were detected in soil and sediment samples collected from the Site. The three EPH fractions and detected target analytes were retained as COCs in this risk characterization. TPH was not retained as a COC to avoid double-counting of the risk[3]. Note that the arithmetic mean concentration of TPH is calculated at 590 mg/kg, much less than the sum of the EPCs for the three EPH fractions (i.e., 1,187 mg/kg) and similar to the EPC of C_{11}-C_{22} aromatics hydrocarbon fraction (454 mg/kg). Further, risks associated with the EPH fractions are minor (i.e., at least one order of magnitude lower than the MCP risk limits). Therefore, exclusion of TPH data would not change the overall risk characterization results and conclusions.

2.2.4 Individual Volatile Organic Compounds in the $C_9 – C_{10}$ Aromatics Fraction

Multiple volatile organic compounds (VOCs) detected in soil (1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, p-isopropyltoluene, isopropylbenzene, n-butylbenzene, n-propylbenzene, sec-butylbenzene, and tert-butylbenzene) belong to the $C_9 – C_{10}$ aromatic hydrocarbon fraction but were reported along with the $C_9 – C_{10}$ aromatic hydrocarbon fraction. The arithmetic mean concentrations of these above-referenced VOCs were several orders of magnitude lower than the EPC for the $C_9 – C_{10}$ aromatic hydrocarbon fraction. Accordingly, the $C_9 – C_{10}$ aromatic fraction was retained as a soil COC and the individual referenced VOCs were not retained as soil COCs. This approach is consistent with the MassDEP (2002d) guidance and avoids "double counting" of the risk associated with these VOCs.

The $C_9 – C_{10}$ aromatic hydrocarbon fraction was not identified as a COC for sediment. All detected VOCs (including some of the above referenced VOCs) were retained as COCs for sediment.

2.2.5 Polychlorinated Biphenyl Congeners

Analyses for polychlorinated biphenyl (PCB) congeners were conducted for certain sediment samples, and PCB was identified as a sediment COC. In addition, in order to evaluate "dioxin-like" toxic responses by certain PCB congeners (USEPA[4], 2008), 2,3,7,8-polychlorinated dibenzo-p-dioxins (2,3,7,8-TCDD; the most well-studied chemical in the dioxin group) was included as a COC for sediment. The derivation of EPCs for total PCBs and 2,3,7,8-TCDD is discussed in Section 2.30.

2.2.6 Xylenes

The xylene results for the samples collected from the Site were reported either as m&p xylene and o-xylene or as total xylenes. Total xylene was identified as a COC for soil, groundwater, and sediment.

---

[3] According to the MassDEP (2002d) guidance, *"if the concentrations of the three EPH fractions and target PAH analytes were added together, it would be equal to a traditional "TPH" value."*

[4] U.S. Environmental Protection Agency.

2.2.7 3& 4-Methylphenols

3&4-Methyphenols were reported as one analyte by the laboratory and the analyte was detected in soil and groundwater at the Site. 4-Methylphenol was retained as a COC for soil and groundwater. The results of 3&4-methylphenol were used to derive the EPCs for the identified COC.

All the other constituents detected in soil, groundwater, sediment, and surface water at the Site were included as COCs in the risk characterization. The COCs identified for soil, groundwater, sediment, and surface water are summarized in Table H-11. The COCs identified for this focused risk assessment include VOCs, semi-volatile organic compounds (SVOCs), EPH and VPH fractions, pesticides, herbicides, PCBs (including Aroclors and 2,3,7,8-TCDD), metals[5], and cyanide.

2.3 EXPOSURE POINT CONCENTRATIONS

The COCs identified for soil, groundwater, sediment, and surface water are summarized in Table H-11 and the EPCs are listed in Table H-12.

2.3.1 Soil

For soil, the arithmetic mean concentrations for all COCs but copper, iron, and cyanide were used as the EPCs. The maximum detected concentrations were used as the EPCs for copper, iron, and cyanide as a conservative approach due to the relatively small sample size.

2.3.2 Groundwater

For groundwater, the arithmetic mean concentrations among the wells were used as the EPCs for all COCs except for carbon disulfide, acenaphthylene, benzo(a)pyrene, and benzo(k)fluoranthene. The maximum concentrations among the wells were used as the EPCs for these four compounds as a conservative approach due to the elevated laboratory reporting limits for certain non-detected results.

Metals in groundwater were reported in the following three formats: (1) dissolved metals, (2) total metals, and (3) pH-adjusted metals. For each metal, the higher value of the arithmetic mean concentrations between total metal and dissolved metal was used as the EPC. The pH-adjusted metal results were not considered representative of the groundwater conditions and therefore were not used to derive groundwater EPCs.

2.3.3 Sediment

For sediment, the arithmetic mean concentrations were used as the EPCs for all COCs.

For each sample, the sum of the PCB congener results was used to represent the total PCB result. If no PCB congener was detected, the lowest RL among the congeners was used to represent the RL of total PCBs. If any PCB congener was detected, the sum of the congener results was used to represent the total PCB result and half RL for the non-detect (if any) was used for the summation. The arithmetic mean concentration of total PCBs was used as the EPC for PCBs in sediment.

The EPC for 2,3,7,8-TCDD (i.e., total dioxin equivalence) was calculated using the World Health Organization Toxicity Equivalence Factors for mammals presented in the USEPA (2008) Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment. The PCB Congeners 105 and 118 were included in the EPC derivation for 2,3,7,8-TCDD.

---

[5] Selenium is not a metal but is treated as a metal under the MCP, and therefore was regarded as a metal in this risk characterization.

DRAFT

2.3.4 Surface Water

For surface water, the maximum detected concentrations were used as the EPCs as a conservative approach.

2.3.5 Soil Dust

Air-borne fugitive dust EPCs were calculated using the soil EPCs, according to the following equation:

$$EPC_{dust} = EPC_{soil} \times PM10 \times C1$$

where:

EPCsoil = exposure point concentration in soil (mg/kg)

PM10 = concentration in air (mg/m^3) of particulate matter with an aerodynamic diameter of less than 10 micrometers, and

C1 = unit conversion factor (1 x 10^{-6} kg/mg).

A PM10 for an excavation scenario (0.06 mg/m^3) was used. This PM10 value was obtained from the MassDEP (1995) guidance.

2.3.6 Ambient Air

Constituents in groundwater at the bottom of a trench may volatilize into the air above the trench, so the ambient air of a utility trench is considered a potential exposure point for construction workers[6].

A box model was used to estimate the potential concentrations in ambient air based on the groundwater EPCs. The ambient air model estimations are presented in Table II-1.

2.3.7 EPC Calculation Notes

As noted above, GZA has retained the C_9-C_{18} aliphatic fraction as a COC for soil, groundwater, and sediment. GZA has utilized the higher concentration calculated between the C_9-C_{18} aliphatic fraction and the C_9-C_{12} aliphatic fraction as the EPC for this COC in soil and groundwater. The arithmetic mean concentration calculated based on the C_9-C_{18} aliphatic fraction results was used as the soil EPC while the arithmetic mean C_9-C_{12} aliphatic fraction[7] concentration was used as the groundwater EPC.

Total xylene results were calculated for the soil, groundwater, and sediment samples by summing the results of m,p-xylene and o-xylene. For this calculation, if only one fraction was detected, the concentration of detected fraction was added to one-

---

[6] Although VOCs in soil could also be volatilizing into the trench air, the VOC levels in the trench via this transport mechanism were not considered significant relative to the VOC levels driven by groundwater accumulating in the trench bottom. Therefore, estimated VOC concentrations in ambient air were derived from the groundwater EPCs.

[7] Note that in general the C_9 – C_{18} aliphatics concentration should be equal to or greater than the C_9 – C_{12} aliphatic fraction concentration; however, for groundwater, the reported maximum C_9 – C_{12} aliphatic fraction concentration was actually greater than the maximum C_9 – C_{18} aliphatic fraction concentration. This is likely due to losses of the more volatile components of the C_9 – C_{12} aliphatic fraction during the EPH analysis. As such, the reported maximum C_9 – C_{12} aliphatic fraction concentration was used as the EPC for the C_9 – C_{18} aliphatic fraction for groundwater.

DRAFT

half of the RL for the other fraction. If neither fraction was detected, the concentration of total xylene was reported as non-detected and the lower RL of the two fractions was used as the RL for total xylene.

Multiple analytes were reported by multiple analytical methods for certain soil, groundwater, and sediment samples. As an example, both USEPA Method 8260 and the VPH method provide results for certain VOCs. If an analyte was reported by multiple analytical methods for the same sample, the maximum concentration detected among the multiple analytical methods was used to represent the concentration of the analyte for the sample. If the analyte was not detected by either method, the minimum RL was used as the RL for the non-detected result.

One-half of the laboratory reporting limit was typically used for a non-detected result in calculating the average in the risk characterization for an analyte that was detected in at least one sample.

3.0 EXPOSURE ASSESSMENT

The Site is to be redeveloped as a resort and casino. The planned construction will include excavation for building foundations, utility lines, and Site grading. Construction workers were identified as a potential receptor group for this focused risk characterization. Construction workers working at the upland portion of the Site were assumed to encounter soil via dermal contact, incidental ingestion, and inhalation of soil-derived fugitive dust. In addition, construction workers were assumed to be exposed to contaminants in groundwater via dermal contact and inhalation of ambient air. Construction workers on the coastal portion of the Site were assumed to be exposed to sediment via dermal contact and incidental ingestion. Construction workers were also assumed to be exposed to surface water via dermal contact. Refer to Table H-13 for details about the exposure assumptions.

Risk estimates were not calculated for other potential receptors that would be expected to have less exposure than construction workers. As an example, risks to local populations via inhalation of dust during the construction period were not evaluated for the Site, since associated risks are not expected to be greater than the risks for construction workers. If a condition of No Significant Risk is shown to exist for construction workers, a condition of No Significant Risk would also exist for receptors with equivalent or less exposure.

DRAFT

4.0 CALCULATING EXPOSURE DOSE

Exposure doses were calculated as the daily amount of constituent taken into the body per unit body weight per unit time (mg/kg-day). The exposure doses were based on conservative exposure assumptions and factors developed in accordance with MassDEP (1995, 2002a, 2002b, and 2008) guidelines.

The general equation used to estimate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD) is:

$$ADD\ or\ LADD = \frac{Total\ Amount\ of\ OHM\ Contacted\ /\ Ingested \times Relative\ Absorption\ Factor}{Body Weight \times Averaging\ Period}$$

For inhalation exposures, Average Daily Exposures (ADEs) and Lifetime Average Daily Exposures (LADEs) were calculated, instead of ADDs and LADDs, by normalizing vapor and dust EPCs with averaging times.

$$ADE\ or\ LADE = \frac{Time - Weighted\ Exposure\ Concentration\ for\ Airborne\ Constituents}{Averaging\ Period}$$

The specific equations used to calculate the ADDs, ADEs, LADEs and LADDs for each exposure pathway and the exposure assumptions used for the construction worker receptor group are presented in Table H-13. These equations incorporate receptor-specific exposure variables and pathway-specific contact rates, along with constituent-specific media exposure point concentrations and relative absorption factors (RAFs) to estimate the constituent-specific doses or exposures for each receptor and pathway. The RAF values are listed in Table H-14. The skin permeability coefficient (K_p), which is a key parameter in estimating the dermal absorption of constituents in water, is presented in Table H-15.

Subchronic ADDs and ADEs were calculated for the evaluation of non-cancer effects associated with short-term exposures (*i.e.,* less than 10 percent of a lifetime, or seven years) for construction workers. LADDs or LADEs were estimated for evaluation of cancer effects.

5.0 DOSE-RESPONSE ASSESSMENT

Toxicity values for the evaluation of potential exposures via the identified exposure routes were obtained from: (1) MassDEP (2014), Office of Research and Standards (ORS) and Bureau of Waste Site Cleanup, *Development of MCP Risk-Based Levels for Soil and Groundwater – MCP Numerical Standards Spreadsheets*; (2) USEPA (2016a), Integrated Risk Information System (IRIS) (an on-line database); (3) USEPA (2011), *Health Effects Assessment Summary Tables* (HEAST); or (4) USEPA (2016b) Provisional Peer Reviewed Toxicity Value (PPRTV). These values are presented in Tables H-16 through H-18.

6.0 RISK ASSESSMENT

GZA conducted a focused risk assessment to calculate risk estimates for construction workers and compared these estimates to the MCP risk limits.

The risk estimates for the identified receptor group were compared to the MassDEP non-cancer risk limit of a Hazard Index equal to 1 and the MassDEP cancer risk limit of an Excess Lifetime Cancer Risk (ELCR) equal to one in one hundred thousand (1×10^{-5}).

Receptor	Hazard Index (HI)	MassDEP HI Risk Limit	Excess Lifetime Cancer Risk (ELCR)	MassDEP ELCR Limit	Exceed MCP Risk Limits?
Construction Workers (Upland)	0.63	1	1.1×10^{-6}	1×10^{-5}	No
Construction Workers (Coastal)	See Risk Segregated by Target Organs		2.8×10^{-6}	1×10^{-5}	No
- Skin (arsenic and silver)	0.67	1			No
- Immune System (PCBs, trichloroethene)	0.24	1			No
- Developmental (lead, Dicamba, and Dinoseb)	0.30	1			No
- All the Other Organs	0.21	1			No

DRAFT

Pathway-specific risk calculations for the identified receptor group are presented in Table H-1 and summarized above. Refer to Tables III-1 through III-9 for the risk calculations performed in this risk characterization to generate non-cancer and cancer risk estimates. The calculated risks for construction workers do not exceed the MassDEP risk limits.

7.0 CONCLUSION

The cumulative non-cancer and cancer risk estimates for construction workers are below MassDEP risk limits. Therefore, the presence of oil and/or hazardous material at the Site does not pose a significant risk of harm to construction workers.

8.0 REFERENCES

Commonwealth of Massachusetts, 2008. Massachusetts Contingency Plan. 310 CMR 40.0000. Massachusetts Department of Environmental Protection (MassDEP), Bureau of Waste Site Cleanup. February 14.

Commonwealth of Massachusetts, 2014. Final Amendments to the Massachusetts Contingency Plan, 310 CMR 40.0000. Massachusetts Department of Environmental Protection (MassDEP), Bureau of Waste Site Cleanup. April.

GEI, 2013. Phase III Remedial Action Plan, Everett Staging Yard, 1 Horizon Way, Everett, Massachusetts. August 27.

MassDEP, 1995. Guidance for Disposal Site Risk Characterization in Support of Massachusetts Contingency Plan. Interim Final Policy BWSC/ORS-95-141. Massachusetts Department of Environmental Protection, Bureau of Waste Site Cleanup and Office of Research and Standards. July.

MassDEP, 2002a. Technical Update to Appendix B Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan (1995). *Calculation of an Enhanced Soil Ingestion Rate.* April.

MassDEP, 2002b. Technical Update to Appendix B Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan (1995). *Weighted Skin-Soil Adherence Factors.* April.

MassDEP, 2002c. Technical Update to Section 2.3 Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan (1992). Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. Office of Research and Standards. May.

MassDEP, 2002d. Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MADEP VPH/EPH Approach. Final Policy. October

MassDEP, 2008. Technical Update to Section 7.3 and Appendix B of the MADEP Guidance for Disposal Site Risk Characterization – In Support of the Massachusetts Contingency Plan (1992). Characterization of Risks Due to Inhalation of Particulates by Construction Workers. Office of Research and Standards. July.

MassDEP, 2014. Development of MCP Risk-Based Levels for Soil and Groundwater.

USEPA, 2008. Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment. June.

DRAFT

USEPA, 2011. Health Effects Assessment Summary Tables (HEAST). U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Office of Emergency and Remedial Response. July.

USEPA, 2016a. Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS/, February.

USEPA, 2016b. Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). http://hhpprtv.ornl.gov/.

J:\170,000-179,999\171521\171521-15.DEL\Construction RAM Plan\Appendix H - Focused RA\construction 171521 15 focused risk_rev.docx

DRAFT

TABLES

DRAFT

TABLE H-1
SUMMARY OF TOTAL HAZARD INDICES AND RISK ESTIMATES
1 Horizon Way
Everett, Massachusetts

Receptor	Exposure Media/Route		Non-Cancer Hazard Index				Excess Lifetime Cancer Risk	
			Subchronic HI	Driver	Chronic HI	Driver	Estimate	Driver
RECEPTOR: Construction/Utility Workers (Upland)	Dermal Contact with Soil	Subtotal:	0.45	Aroclor - 1260	NC	NA	4.6E-07	Arsenic
	Incidental Ingestion of Soil	Subtotal:	0.048	Bis(2-Ethylhexyl)phthalate	NC	NA	6.0E-07	Arsenic
	Inhalation of Soil-derived Fugitive Dust	Subtotal:	0.06	Arsenic	NC	NA	4.1E-08	Chromium (total)
	Absorption via Gastrointestinal Tract		0.021	Lead			1.6E-08	Arsenic
	Respiratory Absorption		0.035	Arsenic			2.6E-08	Chromium (total)
	Dermal Contact with Groundwater	Subtotal:	0.014	Arsenic	NC	NA	3.7E-07	Dibenzo(a,h)anthrace
	Inhalation of Ambient Air	Subtotal:	0.074	Cyanide	NC	NA	7.7E-10	Benzene
	Total for RECEPTOR: Construction/Utility Workers:		**0.64**		**NC**		**1.5E-06**	
	MCP Risk Limits:		**1**		**1**		**1E-05**	
	Exceed MCP Risk Limits?		**NO**		**NO**		**NO**	
RECEPTOR: Construction Workers (Coastal)	Dermal Contact with Sediment	Subtotal:	0.88	Arsenic	NC	NA	1.7E-06	Benzo(a)Pyrene
	Incidental Ingestion of Sediment	Subtotal:	0.51	Arsenic	NC	NA	8.6E-07	Benzo(a)Pyrene
	Dermal Contact with Surface Water	Subtotal:	0.026	Arsenic	NC	NA	2.0E-07	Benzo(a)Pyrene
	Total for RECEPTOR: Construction Workers:		**See Risk Segregated by Target Organs**		**NC**		**2.8E-06**	
	Risk Segregated by Target Organs:							
	- Skin (arsenic and silver)		**0.67**					
	- Immune System (PCBs and trichloroethene)		**0.24**					
	- Developmental (lead, Dicamba, and Dinoseb)		**0.30**					
	- All the Other Organs		**0.21**					
	MCP Risk Limits:		**1**		**1**		**1E-05**	
	Exceed MCP Risk Limits?		**NO**		**NO**		**NO**	

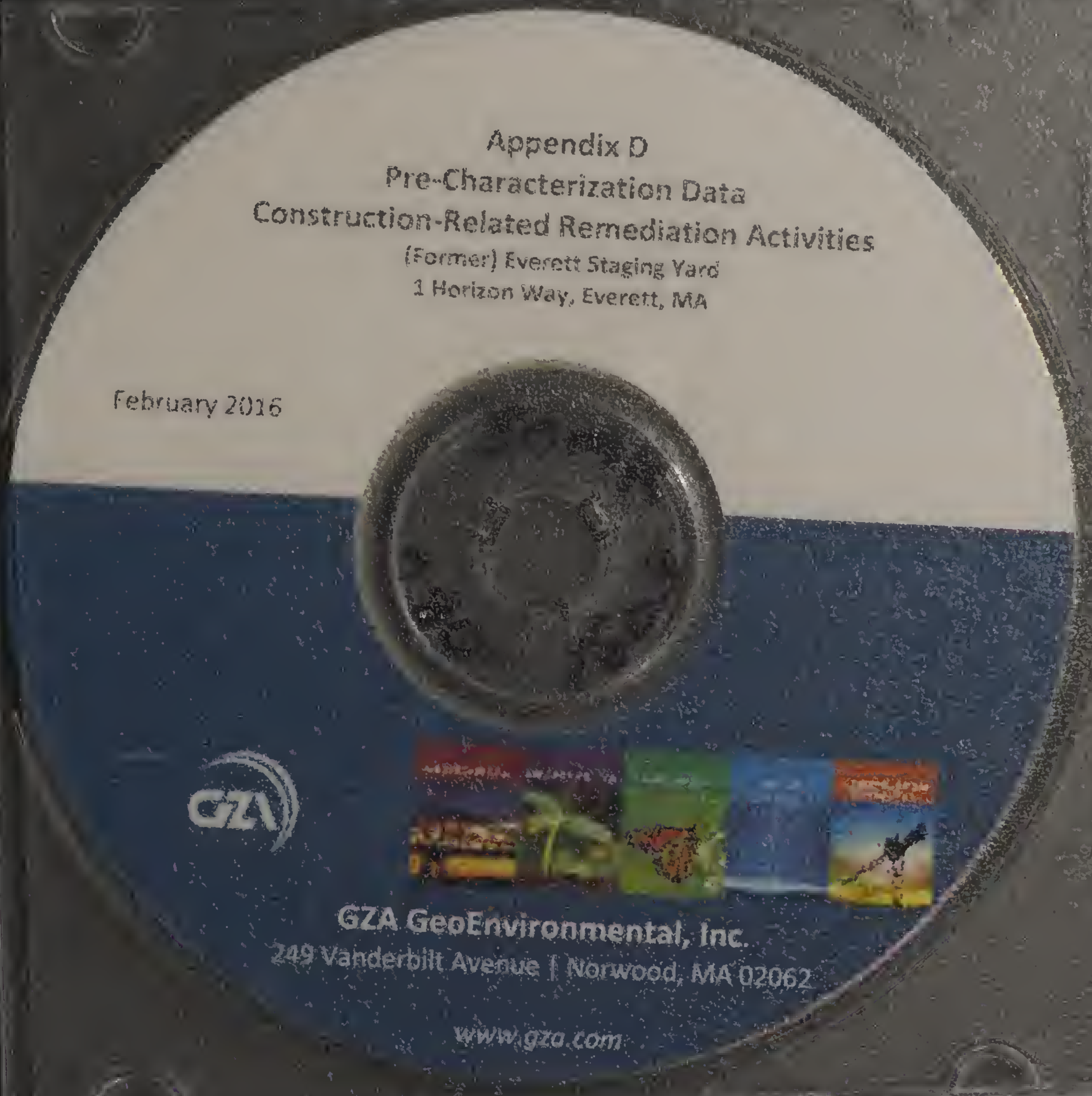
Abbreviations:
MCP = Massachusetts Contingency Plan; NA = Not applicable; NC = Not Calculated.

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		S-1	S-2	S-5	S-6	S-7	S-8	S-9	S-28	S-28	S-29	S-30	S-31	S-32	S-33	S-34	S-35	S-36	S-37	B218	B220	BOR-9	TP-1	TP-2	BOR-13	BOR-18	BOR-19	BOR-20	BOR-21	B213	B214	B219	NW-1
Sample Depth (ft bgs):		0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0 - 1	0 - 1	0-2	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0 - 3	0 - 3	0 - 3	0-3
Sample Date:		6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	12/17/12	12/17/12	4/2/01	5/2/01	5/2/01	5/3/01	5/3/01	5/3/01	5/3/01	5/3/01	12/17/12	12/17/12	12/17/12	3/19/13
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.44	< 0.56	< 0.56	< 0.35	< 0.51	< 0.56	< 0.48	< 0.40	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.044	< 0.056	< 0.056	< 0.035	< 0.051	< 0.056	< 0.048	< 0.040	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.44	< 0.56	< 0.56	< 0.35	< 0.51	< 0.56	< 0.48	< 0.40	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.44	< 0.56	< 0.56	< 0.35	< 0.51	< 0.56	< 0.48	< 0.40	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.066	< 0.084	< 0.083	< 0.052	< 0.076	< 0.084	< 0.072	< 0.060	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.044	< 0.056	< 0.056	< 0.035	< 0.051	< 0.056	< 0.048	< 0.040	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.22	< 0.28	< 0.28	< 0.17	< 0.25	< 0.28	< 0.24	< 0.20	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.22	< 0.28	< 0.28	< 0.17	< 0.25	< 0.28	< 0.24	< 0.20	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.22	< 0.28	< 0.28	< 0.17	< 0.25	< 0.28	< 0.24	< 0.20	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.044	< 0.056	< 0.056	< 0.035	< 0.051	< 0.056	< 0.048	< 0.040	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.066	< 0.084	< 0.083	< 0.052	< 0.076	< 0.084	< 0.072	< 0.060	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.044	< 0.056	< 0.056	< 0.035	< 0.051	< 0.056	< 0.048	< 0.040	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.22	< 0.28	< 0.28	< 0.17	< 0.25	< 0.28	< 0.24	< 0.20	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.22	< 0.28	< 0.28	< 0.17	< 0.25	< 0.28	< 0.24	< 0.20	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.044	< 0.056	< 0.056	< 0.035	< 0.051	< 0.056	< 0.048	< 0.040	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.17	< 2.25	< 2.22	< 1.38	< 2.03	< 2.23	< 1.92	< 1.61	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.17	< 2.25	< 2.22	< 1.38	< 2.03	< 2.23	< 1.92	< 1.61	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.17	< 2.25	< 2.22	< 1.38	< 2.03	< 2.23	< 1.92	< 1.61	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		< 15.9	< 9.01	< 7.94	< 8.13	< 7.58	< 7.49	< 7.33	47.9	37.6	< 6.73	520	< 6.94	< 13.9	< 7.17	< 7.17	< 45	< 37.9	< 37.4	--	--	28.6	12	< 10.8	< 10.5	< 10.6	< 11.0	< 10.5	< 10.5	--	--	--	--
C_{19}-C_{36} Aliphatics		205	< 9.01	9.81	40.6	63.4	14.5	15.8	117	106	140	549	52.4	104	31.2	15.3	438	156	112	--	--	590	125	90.6	< 10.5	196	33.5	< 10.5	32.3	--	--	--	--
C_{11}-C_{22} Aromatics		164	< 9.01	21.5	40.7	21.8	< 7.49	< 7.33	90	61.6	58.4	496	51.9	63	15.6	15.2	150	130	258	--	--	164	152	78.5	< 10.5	218	78.9	< 10.5	< 10.5	--	--	--	--
Acenaphthene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	3.16	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Acenaphthylene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	< 1.87	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Anthracene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	6.01	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(a)anthracene		< 0.794	< 0.450	0.462	0.552	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.409	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	6.47	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(a)pyrene		< 0.794	< 0.450	0.433	0.512	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.396	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	5.45	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(b)fluoranthene		< 0.794	< 0.450	0.418	0.509	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.409	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	4.05	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(ghi)perylene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	2.89	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Benzo(k)fluoranthene		< 0.794	< 0.450	0.408	0.482	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.382	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	4.57	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Chrysene		< 0.794	< 0.450	0.575	0.735	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.507	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	6.91	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Dibenzo(a,h)anthracene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	< 1.87	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Fluoranthene		< 0.794	< 0.450	0.982	0.899	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.71	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	15.1	--	--	0.62	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Fluorene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	3.8	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Indeno(1,2,3-cd)pyrene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	3.36	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Methylnaphthalene, 2-		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	< 1.87	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Naphthalene		< 0.794	< 0.450	< 0.397	< 0.406	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	< 0.347	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	< 1.87	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Phenanthrene		< 0.794	< 0.450	0.857	0.488	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.416	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	19.9	--	--	< 0.54	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Pyrene		< 0.794	< 0.450	0.808	0.766	< 0.379	< 0.374	< 0.366	< 0.733	< 0.725	< 0.337	< 6.80	0.68	< 0.694	< 0.358	< 0.358	< 2.25	< 1.89	12.1	--	--	0.59	< 2.8	< 2.7	< 0.53	< 2.6	< 2.7	< 0.53	< 0.53	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		< 2.4	< 2.7	< 2.4	< 2.4	< 2.2	< 2.2	< 2.2	2.2	3.3	< 2.0	2.9	7.5	< 2.1	< 2.1	< 2.1	2.7	< 2.2	2.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		3.7	24	8.5	8.4	5	6.4	7.8	6.2	7.5	2.7	8.5	34	4.9	3.8	3.8	21	7.1	18	6.8	6.6	13	6.6	3.6	5.4	33	26	7.8	3.9	4.7	11.4	4.2	5.9
Barium		25	85	25	34	21	16	16	21	27	21	25	65	35	12	11	97	32	56	--	--	27	41	25	17	43	60	16	22	--	--	--	--
Beryllium		< 0.24	0.4	0.26	0.33	0.22	0.23	< 0.22	< 0.22	< 0.21	< 0.20	< 0.20	< 0.21	0.29	< 0.21	< 0.21	< 0.27	< 0.22	< 0.22	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		< 0.47	< 0.54	< 0.47	0.53	< 0.45	< 0.45	< 0.43	< 0.44	0.55	< 0.40	0.5	< 0.41	< 0.42	< 0.43	< 0.43	1.6	< 0.45	1.2	--	--	< 0.43	< 0.44	< 0.42	< 0.42	< 0.42	< 0.43	< 0.42	< 0.42	--	--	--	--
Chromium		11	42	27	23	16	18	44	39	65	20	50	14	19	16	8.7	41	18	20	--	--	13	14	16	21	16	18	22	22	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		57	210	61	93	23	11	19	2400	4900	3100	810	1400	25	8.6	7.2	850	420	300	9.8	250	28	100	12	< 2.1	440	220	4.2	4.5	11.3	487	20.9	36.8
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--



Appendix D
Pre-Characterization Data
Construction-Related Remediation Activities

(Former) Everett Staging Yard
1 Horizon Way, Everett, MA

February 2016

GZA GeoEnvironmental, Inc.
249 Vanderbilt Avenue | Norwood, MA 02062

www.gza.com

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		S-1	S-2	S-5	S-6	S-7	S-8	S-9	S-28	S-28	S-29	S-30	S-31	S-32	S-33	S-34	S-35	S-36	S-37	B218	B220	BOR-9	TP-1	TP-2	BOR-13	BOR-18	BOR-19	BOR-20	BOR-21	B213	B214	B219	NW-1
Sample Depth (ft bgs):		0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0 - 1	0 - 1	0-2	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0 - 3	0 - 3	0 - 3	0-3
Sample Date:		6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	12/17/12	12/17/12	4/2/01	5/2/01	5/2/01	5/3/01	5/3/01	5/3/01	5/3/01	5/3/01	12/17/12	12/17/12	12/17/12	3/19/13
Analyte	Units																																
Mercury		< 0.1	0.14	< 0.09	0.16	< 0.09	< 0.09	< 0.08	< 0.09	< 0.08	< 0.08	< 0.08	5.2	< 0.08	< 0.07	< 0.08	0.13	< 0.09	0.34	--	--	< 0.26	< 0.26	< 0.25	< 0.26	0.5	0.32	< 0.24	< 0.23	--	--	--	--
Nickel		8.7	18	19	21	14	16	52	38	56	11	52	14	15	12	5.4	28	13	16	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		< 2.4	< 2.7	< 2.4	< 2.4	< 2.2	< 2.2	< 2.2	< 22	< 21	< 2.0	< 20	25	< 2.1	< 2.1	< 2.1	< 2.7	< 2.2	< 2.2	--	--	< 1.7	< 4.4	< 4.2	< 4.2	8.9	< 4.3	< 4.2	< 4.2	--	--	--	--
Silver		< 0.47	< 0.54	< 0.47	< 0.48	< 0.45	< 0.45	< 0.43	< 0.44	< 0.43	< 0.40	< 0.40	1.3	< 0.42	< 0.43	< 0.43	0.56	< 0.45	0.51	--	--	< 0.43	< 0.44	< 0.42	< 0.42	1.2	0.56	< 0.42	< 0.42	--	--	--	--
Thallium		< 2.4	< 2.7	< 24	< 2.4	< 2.2	< 2.2	< 11	< 22	< 21	< 2.0	< 20	< 21	< 2.1	< 2.1	< 2.1	< 5.4	< 2.2	< 2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		28	53	28	24	18	17	30	21	22	28	31	26	35	33	17	56	25	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		65	100	120	2100	50	48	82	120	390	210	76	110	150	43	26	500	190	260	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	3.16	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Acenaphthylene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	<1.87	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Anthracene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	6.01	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(a)anthracene		<0.794	<0.45	0.462	0.552	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.409	<0.694	<0.358	<0.358	<2.25	<1.89	6.47	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(a)pyrene		<0.794	<0.45	0.433	0.512	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.396	<0.694	<0.358	<0.358	<2.25	<1.89	5.45	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(b)fluoranthene		<0.794	<0.45	0.418	0.509	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.409	<0.694	<0.358	<0.358	<2.25	<1.89	4.05	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(ghi)perylene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	2.89	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Benzo(k)fluoranthene		<0.794	<0.45	0.408	0.482	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.382	<0.694	<0.358	<0.358	<2.25	<1.89	4.57	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Chrysene		<0.794	<0.45	0.575	0.735	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.507	<0.694	<0.358	<0.358	<2.25	<1.89	6.91	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Dibenzo(a,h)anthracene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	<1.87	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Fluoranthene		<0.794	<0.45	0.982	0.899	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.71	<0.694	<0.358	<0.358	<2.25	<1.89	15.1	--	--	0.62	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Fluorene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	3.8	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Indeno(1,2,3-cd)pyrene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	3.36	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Methylnaphthalene, 2-		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	<1.87	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Naphthalene		<0.794	<0.45	<0.397	<0.406	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	<0.347	<0.694	<0.358	<0.358	<2.25	<1.89	<1.87	--	--	<0.22	<0.28	<0.28	<0.17	<0.25	<0.28	<0.24	<0.2	--	--	--	--
Phenanthrene		<0.794	<0.45	0.857	0.488	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.416	<0.694	<0.358	<0.358	<2.25	<1.89	19.9	--	--	<0.54	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--
Pyrene		<0.794	<0.45	0.808	0.766	<0.379	<0.374	<0.366	<0.733	<0.725	<0.337	<6.8	0.68	<0.694	<0.358	<0.358	<2.25	<1.89	12.1	--	--	0.59	<2.8	<2.7	<0.53	<2.6	<2.7	<0.53	<0.53	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		NW-2	NW-3	NW-3	SE-1	SE-2	SE-2	SE-3	W-1	W-2	W-2	RIZ-4-A	RIZ-4-B	RIZ-6-A	RIZ-6-B	RIZ-6-C	RIZ-6-D	BOR-7-A	BOR-7-B	BOR-7-C	BOR-7-D	TP-15-A	TP-15-B	TP-15-C	TP-15-D	BOR-110	BOR-118	B/MW-202	BOR-17	BOR-120	BOR-111-1	BOR-111-2	RIZ-4-A
Sample Depth (ft bgs):		0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	2-3	2-5.5	3 - 5	3-6	4-5	4-6	4-6	4-8
Sample Date:		3/19/13	3/19/13	3/19/13	3/20/13	3/20/13	3/20/13	3/19/13	3/20/13	3/20/13	3/20/13	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	1/4/06	1/4/06	12/14/12	5/3/01	1/4/06	3/20/13	3/20/13	12/7/05
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.91	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.091	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.91	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.91	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.14	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.091	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.46	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.46	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.091	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.14	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.091	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.46	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.46	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.091	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.65	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.65	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.65	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Anthracene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.49	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.76	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.58	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.69	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.26	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.29	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	< 0.35	--	--	< 0.36	--	--	--	--	< 0.35	--	--	--	< 0.35	--	--	--	--	--	--	--	--	< 0.41
Chrysene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.69	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	< 0.35	--	--	< 0.36	--	--	--	--	< 0.35	--	--	--	< 0.35	--	--	--	--	--	--	--	--	< 0.41
Fluoranthene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	1.71	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Fluorene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	0.29	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Naphthalene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	< 0.18	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Phenanthrene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	1.4	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Pyrene		--	--	--	--	--	--	--	--	--	--	< 0.18	--	--	1.4	--	--	--	--	< 0.18	--	--	--	< 0.18	--	--	--	--	--	--	--	--	< 0.21
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	--	--	--	< 31.6	< 31.4	--	--	--	--	--	--	--	--	--	--	--	--	< 179	< 37.1	--	< 12.0	< 35.7	--	--	< 36.8
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	--	--	--	< 31.6	< 31.4	--	--	--	--	--	--	--	--	--	--	--	--	< 179	< 37.1	--	28.6	< 35.7	--	--	< 36.8
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	--	--	--	< 31.6	< 31.4	--	--	--	--	--	--	--	--	--	--	--	--	1510	< 37.1	--	854	< 35.7	--	--	< 36.8
Acenaphthene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	56	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	3.2	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Anthracene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	86.7	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	79	< 0.2	--	2	0.1	--	--	< 0.2
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	< 0.2	0.2	--	--	--	--	--	--	--	--	--	--	--	--	54.1	< 0.2	--	1.9	< 0.2	--	--	< 0.2
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--	--	42.4	< 0.2	--	2.6	< 0.2	--	--	< 0.2
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	22.7	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--	--	49.9	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Chrysene		--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--	81	< 0.2	--	2.2	0.3	--	--	< 0.2
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	6.9	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Fluoranthene		--	--	--	--	--	--	--	--	--	--	0.4	0.4	--	--	--	--	--	--	--	--	--	--	--	--	211	0.3	--	4.1	0.4	--	--	< 0.2
Fluorene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	61.1	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	29.9	< 0.2	--	1.3	< 0.2	--	--	< 0.2
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.2	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	12.5	< 0.2	--	< 1.2	< 0.2	--	--	< 0.2
Naphthalene		--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	18.6	< 0.2	--	< 1.2	< 0.2	--	--	0.2
Phenanthrene		--	--	--	--	--	--	--	--	--	--	0.2	0.3	--	--	--	--	--	--	--	--	--	--	--	--	292	0.3	--	4.4	0.3	--	--	< 0.2
Pyrene		--	--	--	--	--	--	--	--	--	--	0.3	0.4	--	--	--	--	--	--	--	--	--	--	--	--	205	0.3	--	4	0.3	--	--	< 0.2
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.110	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.110	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.110	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.110	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.110	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 4.95	--	--	--	--	--	--
Arsenic		23.4	6.9	11.7	9.1	6.6	6.3	18.7	5.7	12.4	17.4	--	--	10.4	8.52	7.19	6.48	7.28	15	< 5.15	5.53	6.65	5.58	6.3	7.31	141	176	--	7.8	45.8	4.4	5.6	--
Barium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	204	--	74	--	--	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.62	--	< 0.48	--	--	--	--
Chromium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.7	--	30	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	333	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		174	21.3	382	16.5	95.4	407	35.7	42.5	166	366	--	--	10.7	40.2	20.8	5.82	13	168	11.4	33.1	8.05	6.61	11.2	5.62	3750	232	--	150	2820	--	--	--
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		NW-2	NW-3	NW-3	SE-1	SE-2	SE-2	SE-3	W-1	W-2	W-2	RIZ-4-A	RIZ-4-B	RIZ-6-A	RIZ-6-B	RIZ-6-C	RIZ-6-D	BOR-7-A	BOR-7-B	BOR-7-C	BOR-7-D	TP-15-A	TP-15-B	TP-15-C	TP-15-D	BOR-110	BOR-118	B/MW-202	BOR-17	BOR-120	BOR-111-1	BOR-111-2	RIZ-4-A
Sample Depth (ft bgs):		0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	0-4	2-3	2-5.5	3 - 5	3-6	4-5	4-6	4-6	4-8
Sample Date:		3/19/13	3/19/13	3/19/13	3/20/13	3/20/13	3/20/13	3/19/13	3/20/13	3/20/13	3/20/13	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	1/4/06	1/4/06	12/14/12	5/3/01	1/4/06	3/20/13	3/20/13	12/7/05
Analyte	Units																																
Mercury		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.332	--	0.38	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	14.5	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 6.18	--	< 4.8	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.36	--	< 0.48	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.71	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	44.1	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	306	--	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	56	<0.2	--	<1.2	<0.2	--	--	<0.2
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	3.2	<0.2	--	<1.2	<0.2	--	--	<0.2
Anthracene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	0.49	--	--	--	--	<0.18	--	--	--	<0.18	--	86.7	<0.2	--	<1.2	<0.2	--	--	<0.2
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	0.76	--	--	--	--	<0.18	--	--	--	<0.18	--	79	<0.2	--	2	0.1	--	--	<0.2
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	<0.18	0.2	--	0.58	--	--	--	--	<0.18	--	--	--	<0.18	--	54.1	<0.2	--	1.9	<0.2	--	--	<0.2
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	0.69	--	--	--	--	<0.18	--	--	--	<0.18	--	42.4	<0.2	--	2.6	<0.2	--	--	<0.2
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.5	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	0.26	--	--	--	--	<0.18	--	--	--	<0.18	--	22.7	<0.2	--	<1.2	<0.2	--	--	<0.2
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	0.1	0.1	--	0.29	--	--	--	--	<0.18	--	--	--	<0.18	--	49.9	<0.2	--	<1.2	<0.2	--	--	<0.2
Chrysene		--	--	--	--	--	--	--	--	--	--	0.1	0.2	--	0.69	--	--	--	--	<0.18	--	--	--	<0.18	--	81	<0.2	--	2.2	0.3	--	--	<0.2
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	6.9	<0.2	--	<1.2	<0.2	--	--	<0.2
Fluoranthene		--	--	--	--	--	--	--	--	--	--	0.4	0.4	--	1.71	--	--	--	--	<0.18	--	--	--	<0.18	--	211	0.3	--	4.1	0.4	--	--	<0.2
Fluorene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	61.1	<0.2	--	<1.2	<0.2	--	--	<0.2
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	0.29	--	--	--	--	<0.18	--	--	--	<0.18	--	29.9	<0.2	--	1.3	<0.2	--	--	<0.2
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<1.2	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	12.5	<0.2	--	<1.2	<0.2	--	--	<0.2
Naphthalene		--	--	--	--	--	--	--	--	--	--	<0.18	<0.2	--	<0.18	--	--	--	--	<0.18	--	--	--	<0.18	--	18.6	<0.2	--	1.2	<0.2	--	--	0.2
Phenanthrene		--	--	--	--	--	--	--	--	--	--	0.2	0.3	--	1.4	--	--	--	--	<0.18	--	--	--	<0.18	--	292	0.3	--	4.4	0.3	--	--	<0.2
Pyrene		--	--	--	--	--	--	--	--	--	--	0.3	0.4	--	1.4	--	--	--	--	<0.18	--	--	--	<0.18	--	205	0.3	--	4	0.3	--	--	<0.2

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		RIZ-4-B	RIZ-6-A	RIZ-6-B	RIZ-6-C	RIZ-6-D	BOR-7-A	BOR-7-B	BOR-7-C	BOR-7-D	TP-15-A	TP-15-B	TP-15-C	TP-15-D	RIZ-4-1	RIZ-4-1	RIZ-4-2	RIZ-4-3	RIZ-4-4	NW-2	RIZ-4	RIZ-5	RIZ-6	RIZ-8	RIZ-9	BOR-3	BOR-4	BOR-5	BOR-7	BOR-10	TP-3	TP-5	TP-9
Sample Depth (ft bgs):		4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	5-6	5-7	5-7	5-7	5-7	5-7	5-7'	5-7	5-7	5-7	5-7	5-7	5-7	5-7
Sample Date:		12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	3/19/13	3/19/13	3/18/13	3/18/13	3/18/13	3/19/13	3/28/01	3/28/01	3/29/01	4/2/01	4/2/01	3/27/01	3/28/01	3/29/01	3/29/01	4/2/01	5/2/01	5/2/01	5/2/01
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.2	--	< 0.75	< 0.90	< 1.1	--	--	--	< 1.2	--	< 0.33	< 0.67	< 0.50
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.55	--	< 0.075	< 0.090	< 0.11	--	--	--	< 0.12	--	< 0.033	< 0.067	< 0.050
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.2	--	< 0.75	< 0.90	< 1.1	--	--	--	< 1.2	--	< 0.33	< 0.67	< 0.50
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.2	--	< 0.75	< 0.90	< 1.1	--	--	--	< 1.2	--	< 0.33	< 0.67	< 0.50
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.48	--	< 0.11	< 0.13	< 0.17	--	--	--	< 0.18	--	< 0.049	< 0.10	< 0.075
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.78	--	< 0.075	< 0.090	< 0.11	--	--	--	< 0.12	--	< 0.033	0.072	< 0.050
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.5	--	< 0.38	< 0.45	< 0.57	--	--	--	< 0.62	--	< 0.16	< 0.33	< 0.25
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.6	--	< 0.38	< 0.45	< 0.57	--	--	--	< 0.62	--	< 0.16	< 0.33	< 0.25
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	16	--	< 0.38	< 0.45	< 0.57	--	--	--	< 0.62	--	< 0.16	< 0.33	< 0.25
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.32	--	< 0.075	< 0.090	< 0.11	--	--	--	< 0.12	--	< 0.033	< 0.067	< 0.050
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.48	--	< 0.11	< 0.13	< 0.17	--	--	--	< 0.18	--	< 0.049	< 0.10	< 0.075
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.32	--	< 0.075	< 0.090	< 0.11	--	--	--	< 0.12	--	< 0.033	< 0.067	< 0.050
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.9	--	< 0.38	< 0.45	< 0.57	--	--	--	< 0.62	--	< 0.16	< 0.33	< 0.25
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.6	--	< 0.38	< 0.45	< 0.57	--	--	--	< 0.62	--	< 0.16	< 0.33	< 0.25
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.16	--	< 0.075	< 0.09	< 0.11	--	--	--	< 0.12	--	< 0.033	0.13	< 0.050
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.6	< 6.2	< 6.6	< 5.1	< 4.6	--	16.6	< 2.97	< 3.00	< 3.58	< 4.56	< 3.03	< 3.57	< 4.94	< 4.89	--	< 1.32	< 2.66	< 2.00
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.6	< 6.2	< 6.6	< 5.1	< 4.6	--	89.7	< 2.97	< 3.00	< 3.58	< 4.56	< 3.03	< 3.57	< 4.94	< 4.89	--	< 1.32	< 2.66	< 2.00
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.6	< 6.2	< 6.6	< 5.1	< 4.6	--	29.3	< 2.97	< 3.00	< 3.58	< 4.56	< 3.03	< 3.57	< 4.94	< 4.89	--	< 1.32	< 2.66	< 2.00
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	< 0.21	--	--	--	--	1.88	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	< 0.21	--	--	--	--	0.2	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	0.22	--	--	--	--	2.28	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	0.4	--	--	--	--	3.54	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	0.3	--	--	--	--	2.26	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	0.36	--	--	--	--	4.96	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	< 0.21	--	--	--	--	0.79	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	< 0.21	--	--	--	--	2.26	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis(2-ethylhexyl) phthalate		--	--	< 0.42	--	--	--	--	< 0.38	--	--	--	< 0.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	0.41	--	--	--	--	5.15	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	< 0.21	--	--	--	--	0.28	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	< 0.42	--	--	--	--	1.07	--	--	--	< 0.36	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	0.91	--	--	--	--	10.2	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	< 0.21	--	--	--	--	1.26	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	< 0.21	--	--	--	--	1.07	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	< 0.21	--	--	--	--	0.65	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	< 0.21	--	--	--	--	1.59	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	0.8	--	--	--	--	5.81	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	0.78	--	--	--	--	8.41	--	--	--	< 0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		109	--	--	--	--	--	--	--	--	--	--	--	--	< 10	< 11	< 10	20.8	< 10	--	2140	< 12.6	< 14.7	< 14.9	< 14.3	< 59.5	< 13.3	< 20.4	< 15.2	< 33	< 11.6	< 12.3	< 11.4
C_{19}-C_{36} Aliphatics		590	--	--	--	--	--	--	--	--	--	--	--	--	19.8	11.4	36.9	48.4	15.4	--	18500	< 12.6	< 14.7	30.2	< 14.3	85.1	67.2	72.4	188	95.4	19.8	72.7	93.8
C_{11}-C_{22} Aromatics		939	--	--	--	--	--	--	--	--	--	--	--	--	24.1	< 21	121	247	41.5	--	15900	< 12.6	< 14.7	84.1	42.4	366	69.7	40.1	85.2	159	31	690	126
Acenaphthene		0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Acenaphthylene		< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Anthracene		1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	0.94	< 0.58	< 3.1	< 1.1
Benzo(a)anthracene		2.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	6.2	< 0.67	< 1.0	< 0.76	2.4	< 0.58	5.5	1.4
Benzo(a)pyrene		2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	4.5	< 0.67	< 1.0	< 0.76	1.8	< 0.58	5.5	1.2
Benzo(b)fluoranthene		2.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	7	< 0.67	< 1.0	1.2	2	< 0.58	4.5	2
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	7	< 0.67	< 1.0	1.2	1.5	< 0.58	3.9	< 1.1
Benzo(ghi)perylene		1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	1.1	< 0.58	3.5	< 1.1
Benzo(k)fluoranthene		2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	3	< 0.67	< 1.0	< 0.76	2	< 0.58	4.8	< 1.1
Chrysene		2.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	5.9	< 0.67	< 1.0	2.7	2.6	< 0.58	5.6	1.5
Dibenzo(a,h)anthracene		0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Fluoranthene		3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18	< 0.63	< 0.74	< 3.7	< 0.71	12	< 0.67	< 1.0	3.9	4.6	< 0.58	12	2.6
Fluorene		< 0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Indeno(1,2,3-cd)pyrene		0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	1.2	< 0.58	3.2	< 1.1
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Methylnaphthalene, 2-		0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	< 0.76	< 0.55	< 0.58	< 3.1	< 1.1
Naphthalene		0.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 16	< 0.63	< 0.74	< 3.7	< 0.71	< 3.0	< 0.67	< 1.0	1.6	< 0.55	< 0.58	< 3.1	< 1.1
Phenanthrene		3.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	21	< 0.63	< 0.74	< 3.7	< 0.71	11	< 0.67	< 1.0	1.1	3.5	< 0.58	7.4	1.7
Pyrene		4.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22	< 0.63	< 0.74	< 3.7	< 0.71	11	< 0.67	< 1.0	< 0.76	4.6	< 0.58	11	2.4
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		--	8.61	42.9	31.9	7.93	46.3	7.06	187	9.4	5.29	7.53	< 5.38	< 5.27	--	--	--	--	--	146	110	6.1	560	4.2	6.7	180	260	140	20	12	100	21	16
Barium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	120	99	86	65	28	48	62	280	340	43	40	73	71
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0	< 1.0	< 5.8	< 0.59	< 0.56	< 4.7	< 5.3	< 8.0	< 6.0	< 0.43	0.5	< 0.49	< 0.45
Chromium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32	51	75	12	10	28	10	37	6.7	25	10	24	19
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		--	115	188	192	296	10000	252	3180	508	33	151	8.96	7.4	--	--	--	--	--	13300	1600	30	440	34	23	760	20000	2600	6300	230	310	1200	1500
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		RIZ-4-B	RIZ-6-A	RIZ-6-B	RIZ-6-C	RIZ-6-D	BOR-7-A	BOR-7-B	BOR-7-C	BOR-7-D	TP-15-A	TP-15-B	TP-15-C	TP-15-D	RIZ-4-1	RIZ-4-1	RIZ-4-2	RIZ-4-3	RIZ-4-4	NW-2
Sample Depth (ft bgs):		4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	4-8	5-6
Sample Date:		12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	3/19/13	3/19/13	3/18/13	3/18/13	3/18/13	3/19/13
Analyte	Units																			
Mercury		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																				
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																			
Acenaphthene		0.4	--	<0.21	--	--	--	--	1.88	--	--	--	<0.18	--	--	--	--	--	--	--
Acenaphthylene		<0.2	--	<0.21	--	--	--	--	0.2	--	--	--	<0.18	--	--	--	--	--	--	--
Anthracene		1	--	0.22	--	--	--	--	2.28	--	--	--	<0.18	--	--	--	--	--	--	--
Benzo(a)anthracene		2.3	--	0.4	--	--	--	--	3.54	--	--	--	<0.18	--	--	--	--	--	--	--
Benzo(a)pyrene		2	--	0.3	--	--	--	--	2.26	--	--	--	<0.18	--	--	--	--	--	--	--
Benzo(b)fluoranthene		2.3	--	0.36	--	--	--	--	4.96	--	--	--	<0.18	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		1.2	--	<0.21	--	--	--	--	0.79	--	--	--	<0.18	--	--	--	--	--	--	--
Benzo(k)fluoranthene		2	--	<0.21	--	--	--	--	2.26	--	--	--	<0.18	--	--	--	--	--	--	--
Chrysene		2.7	--	0.41	--	--	--	--	5.15	--	--	--	<0.18	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		0.2	--	<0.21	--	--	--	--	0.28	--	--	--	<0.18	--	--	--	--	--	--	--
Fluoranthene		3.8	--	0.91	--	--	--	--	10.2	--	--	--	<0.18	--	--	--	--	--	--	--
Fluorene		<0.2	--	<0.21	--	--	--	--	1.26	--	--	--	<0.18	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		0.3	--	<0.21	--	--	--	--	1.07	--	--	--	<0.18	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		0.2	--	<0.21	--	--	--	--	0.65	--	--	--	<0.18	--	--	--	--	--	--	--
Naphthalene		0.3	--	<0.21	--	--	--	--	1.59	--	--	--	<0.18	--	--	--	--	--	--	--
Phenanthrene		3.3	--	0.8	--	--	--	--	5.81	--	--	--	<0.18	--	--	--	--	--	--	--
Pyrene		4.1	--	0.78	--	--	--	--	8.41	--	--	--	<0.18	--	--	--	--	--	--	--

Sample Location:		RIZ-4	RIZ-5	RIZ-6	RIZ-8	RIZ-9	BOR-3	BOR-4	BOR-5	BOR-7	BOR-10	TP-3	TP-5	TP-9
Sample Depth (ft bgs):		5-7	5-7	5-7	5-7	5-7	5-7'	5-7	5-7	5-7	5-7	5-7	5-7	5-7
Sample Date:		3/28/01	3/28/01	3/29/01	4/2/01	4/2/01	3/27/01	3/28/01	3/29/01	3/29/01	4/2/01	5/2/01	5/2/01	5/2/01
Analyte	Units													
Mercury		4.9	< 0.27	< 0.34	< 0.36	< 0.34	1.3	43	1.4	1.4	< 0.24	< 0.28	0.52	1.2
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		< 25	< 2.5	< 29	< 2.4	< 2.2	26	330	< 40	< 30	< 1.7	< 4.6	< 4.9	< 4.5
Silver		< 5.0	< 0.50	11	0.69	< 0.56	< 4.7	< 5.3	8.9	11	< 0.43	1	< 0.49	0.88
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--
Other														
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg													
Acenaphthene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Acenaphthylene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Anthracene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	0.94	<0.58	<3.1	<1.1
Benzo(a)anthracene		<16	<0.63	<0.74	<3.7	<0.71	6.2	<0.67	<1	<0.76	2.4	<0.58	5.5	1.4
Benzo(a)pyrene		<16	<0.63	<0.74	<3.7	<0.71	4.5	<0.67	<1	<0.76	1.8	<0.58	5.5	1.2
Benzo(b)fluoranthene		<16	<0.63	<0.74	<3.7	<0.71	7	<0.67	<1	1.2	2	<0.58	4.5	2
Benzo(e)pyrene		<16	<0.63	<0.74	<3.7	<0.71	7	<0.67	<1	1.2	1.5	<0.58	3.9	<1.1
Benzo(ghi)perylene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	1.1	<0.58	3.5	<1.1
Benzo(k)fluoranthene		<16	<0.63	<0.74	<3.7	<0.71	3	<0.67	<1	<0.76	2	<0.58	4.8	<1.1
Chrysene		<16	<0.63	<0.74	<3.7	<0.71	5.9	<0.67	<1	2.7	2.6	<0.58	5.6	1.5
Dibenzo(a,h)anthracene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Fluoranthene		18	<0.63	<0.74	<3.7	<0.71	12	<0.67	<1	3.9	4.6	<0.58	12	2.6
Fluorene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Indeno(1,2,3-cd)pyrene		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	1.2	<0.58	3.2	<1.1
Methylnaphthalene, 1-		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Methylnaphthalene, 2-		<16	<0.63	<0.74	<3.7	<0.71	<3	<0.67	<1	<0.76	<0.55	<0.58	<3.1	<1.1
Naphthalene		16	<0.63	<0.38	<0.45	<0.57	<3	<0.67	<1	1.6	<0.55	<0.16	<0.33	<0.25
Phenanthrene		21	<0.63	<0.74	<3.7	<0.71	11	<0.67	<1	1.1	3.5	<0.58	7.4	1.7
Pyrene		22	<0.63	<0.74	<3.7	<0.71	11	<0.67	<1	<0.76	4.6	<0.58	11	2.4

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location: Sample Depth (ft bgs): Sample Date: Analyte	Units	TP-12 5-7' 5/2/01	TP-15 5-7 5/2/01	CES-TP-1 5-8 8/25/95	CES-TP-2 5-8 8/25/95	NW-1 5-10 3/19/13	NW-3 5-10 3/19/13	SE-2 5-10 3/20/13	SE-3 5-10 3/19/13	W-1 5-10 3/20/13	W-2 5-10 3/20/13	B-1 6 5/31/07	BOR-111 6-7 1/4/06	BOR-115 6-7 1/4/06	TP-4 6-8 5/2/01	TP-8 6-8 5/2/01	TP-13 6-8 5/2/01	B218 6 - 8 12/17/12	BOR-111-1 6-8 3/20/13	BOR-111-2 6-8 3/20/13	BOR-111-2 6-8 3/20/13	BOR-14 6-9 5/3/01	BOR-112 6.75-9.75 1/4/06	BOR-117 7-8 1/4/06	CES-6 7-9 12/18/96	TP-7 7-9 5/2/01	BOR-114 7-9 1/4/06	B-8 8 5/31/07	BOR-116 8-10 1/4/06	BOR-111-1 8-10 3/20/13	BOR-111-2 8-10 3/20/13	CES-6 9-13 12/18/96	BOR-118 9.75-10 1/4/06
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		< 0.56	< 0.72	--	0.067	--	--	--	--	--	--	--	--	--	< 0.64	< 0.82	< 0.61	--	--	--	--	--	--	--	--	< 0.59	--	--	--	--	--	--	--
Benzene		< 0.056	< 0.072	--	0.002	--	--	--	--	--	--	--	--	--	< 0.064	< 0.082	< 0.061	--	--	--	--	--	--	--	--	< 0.059	--	--	--	--	--	--	--
Butanone, 2- (MEK)		< 0.56	< 0.72	--	0.01	--	--	--	--	--	--	--	--	--	< 0.64	< 0.82	< 0.61	--	--	--	--	--	--	--	--	< 0.59	--	--	--	--	--	--	--
Carbon disulfide		< 0.56	< 0.72	--	0.014	--	--	--	--	--	--	--	--	--	< 0.64	< 0.82	< 0.61	--	--	--	--	--	--	--	--	< 0.59	--	--	--	--	--	--	--
Chloroform		< 0.084	< 0.11	--	< 0.008	--	--	--	--	--	--	--	--	--	< 0.095	< 0.12	< 0.091	--	--	--	--	--	--	--	--	< 0.089	--	--	--	--	--	--	--
Ethylbenzene		0.059	< 0.072	--	0.002	--	--	--	--	--	--	--	--	--	< 0.064	< 0.082	< 0.061	--	--	--	--	--	--	--	--	< 0.059	--	--	--	--	--	--	--
Isopropyltoluene, p-		< 0.28	< 0.36	--	--	--	--	--	--	--	--	--	--	--	< 0.32	< 0.41	< 0.30	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--
Methylene Chloride		< 0.28	< 0.36	--	0.029	--	--	--	--	--	--	--	--	--	< 0.32	< 0.41	< 0.30	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--
Naphthalene		0.28	< 0.36	--	--	--	--	--	--	--	--	--	--	--	0.32	0.44	0.31	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--
Styrene		< 0.056	< 0.072	--	< 0.008	--	--	--	--	--	--	--	--	--	< 0.064	< 0.082	< 0.061	--	--	--	--	--	--	--	--	< 0.059	--	--	--	--	--	--	--
Toluene		< 0.084	< 0.11	--	0.002	--	--	--	--	--	--	--	--	--	< 0.095	< 0.12	< 0.091	--	--	--	--	--	--	--	--	< 0.089	--	--	--	--	--	--	--
Trichloroethylene		< 0.056	< 0.072	--	< 0.008	--	--	--	--	--	--	--	--	--	< 0.064	< 0.082	< 0.061	--	--	--	--	--	--	--	--	< 0.059	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		< 0.28	< 0.36	--	--	--	--	--	--	--	--	--	--	--	< 0.32	< 0.41	< 0.30	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		< 0.28	< 0.36	--	--	--	--	--	--	--	--	--	--	--	< 0.32	< 0.41	< 0.30	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--
Xylene, Total		< 0.056	< 0.072	--	< 0.008	--	--	--	--	--	--	--	--	--	< 0.064	< 0.082	< 0.061	--	--	--	--	--	--	--	--	< 0.059	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		< 2.25	< 2.90	--	--	--	--	--	--	--	--	--	--	--	< 2.54	< 3.27	< 2.43	--	--	--	--	--	--	--	--	< 2.36	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		< 2.25	< 2.90	--	--	--	--	--	--	--	--	--	--	--	< 2.54	< 3.27	< 2.43	--	--	--	--	--	--	--	--	< 2.36	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		< 2.25	< 2.90	--	--	--	--	--	--	--	--	--	--	--	< 2.54	< 3.27	< 2.43	--	--	--	--	--	--	--	--	< 2.36	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.9	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.1	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.9	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7.2	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		< 11.1	18	--	--	--	--	--	--	--	--	--	< 175	< 34.1	14.5	< 12.2	< 11.8	--	--	--	--	--	< 38.0	72.4	--	< 11.1	< 37.0	< 24	< 42.7	--	--	--	< 59.0
C_{19}-C_{36} Aliphatics		88.9	120	--	--	--	--	--	--	--	--	--	< 175	< 34.1	56.7	73.6	58.6	--	--	--	--	--	< 38.0	3830	--	63.4	< 37.0	140	< 42.7	--	--	--	< 59.0
C_{11}-C_{22} Aromatics		181	128	--	--	--	--	--	--	--	--	--	1500	61.3	144	226	158	--	--	--	--	--	< 38.0	1940	--	56.1	< 37.0	290	< 42.7	--	--	--	< 59.0
Acenaphthene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	13.1	0.5	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	0.9	--	< 1.1	< 0.2	0.5	< 0.2	--	--	--	< 0.2
Acenaphthylene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	11.4	< 0.2	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	0.2	--	< 1.1	< 0.2	0.9	< 0.2	--	--	--	< 0.2
Anthracene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	60.4	1.1	< 0.6	< 1.2	2.1	--	--	--	--	--	< 0.2	1.9	--	< 1.1	< 0.2	2.1	< 0.2	--	--	--	< 0.2
Benzo(a)anthracene		1.7	< 6.1	--	--	--	--	--	--	--	--	--	97.6	2.5	1.5	2.8	5.9	--	--	--	--	--	0.2	< 0.2	--	< 1.1	< 0.2	6.9	0.3	--	--	--	0.5
Benzo(a)pyrene		1.5	< 6.1	--	--	--	--	--	--	--	--	--	42.2	2.2	1.4	2.2	5.2	--	--	--	--	--	0.2	2.7	--	< 1.1	< 0.2	4.5	0.3	--	--	--	0.4
Benzo(b)fluoranthene		2.6	< 6.1	--	--	--	--	--	--	--	--	--	48.6	1.9	2.1	2.2	7.6	--	--	--	--	--	< 0.2	1.7	--	< 1.1	< 0.2	4	0.2	--	--	--	0.4
Benzo(e)pyrene		1.3	< 6.1	--	--	--	--	--	--	--	--	--	--	--	1.2	1.7	3.8	--	--	--	--	--	--	--	--	< 1.1	--	--	--	--	--	--	--
Benzo(ghi)perylene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	26.5	1.4	0.85	1.2	2.8	--	--	--	--	--	< 0.2	< 0.2	--	< 1.1	< 0.2	1.2	< 0.2	--	--	--	< 0.2
Benzo(k)fluoranthene		1.2	< 6.1	--	--	--	--	--	--	--	--	--	64.3	2.1	0.78	2.4	3	--	--	--	--	--	< 0.2	1.9	--	< 1.1	< 0.2	4.5	0.2	--	--	--	0.4
Chrysene		2	< 6.1	--	--	--	--	--	--	--	--	--	104	3.1	1.6	2.9	6	--	--	--	--	--	0.3	2	--	< 1.1	< 0.2	6.3	0.3	--	--	--	0.6
Dibenzo(a,h)anthracene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	9.4	0.3	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	< 0.2	--	< 1.1	< 0.2	0.9	< 0.2	--	--	--	< 0.2
Fluoranthene		4.1	< 6.1	--	--	--	--	--	--	--	--	--	264	5.6	2.3	5.6	13	--	--	--	--	--	0.6	4.3	--	1.3	< 0.2	14	0.2	--	--	--	1.1
Fluorene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	12.2	0.5	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	0.9	--	< 1.1	< 0.2	0.6	< 0.2	--	--	--	< 0.2
Indeno(1,2,3-cd)pyrene		1.2	< 6.1	--	--	--	--	--	--	--	--	--	31.2	1.3	0.97	1.3	3	--	--	--	--	--	< 0.2	< 0.2	--	< 1.1	< 0.2	0.9	< 0.2	--	--	--	< 0.2
Methylnaphthalene, 1-		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	--	--	< 0.6	< 1.2	< 1.2	--	--	--	--	--	--	--	--	< 1.1	--	--	--	--	--	--	--
Methylnaphthalene, 2-		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	6.3	0.2	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	0.5	--	< 1.1	< 0.2	< 0.5	< 0.2	--	--	--	< 0.2
Naphthalene		< 1.1	< 6.1	--	--	--	--	--	--	--	--	--	4.1	0.3	< 0.6	< 1.2	< 1.2	--	--	--	--	--	< 0.2	0.3	--	< 1.1	< 0.2	< 0.5	< 0.2	--	--	--	< 0.2
Phenanthrene		2.7	< 6.1	--	--	--	--	--	--	--	--	--	363	5.2	1	5.4	6.7	--	--	--	--	--	0.4	5.3	--	< 1.1	< 0.2	4.3	< 0.2	--	--	--	0.7
Pyrene		3.6	< 6.1	--	--	--	--	--	--	--	--	--	229	6.5	2.1	4.7	10	--	--	--	--	--	0.6	4.6	--	1.2	< 0.2	14	0.3	--	--	--	1
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	< 530	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	< 530	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	< 530	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	< 530	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	210	--	--	--	--	--	--	890	--
Total Petroleum Hydrocarbons		--	--	--	17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	210	--	--	--	--	--	--	890	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	<0.11	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	0.263	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	<0.11	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	<0.11	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	--	--	--	0.263	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	--	--	--	--
Arsenic		31	320	--	--	52.7	44	18.3	113	30.1	6.5	19	622	16	45	74	26	--	3.9	4.9	5.4	--	53.3	28	14	9	59.2	59	139	6.2	170	5.8	18.9
Barium		58	66	--	--	--	--	--	--	--	--	98	--	--	63	73	100	--	--	--	--	--	--	--	55	38	--	150	133	--	--	13	353
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.36	--	--	--	--
Cadmium		< 0.44	1	--	--	--	--	--	--	--	--	0.9	--	--	7.5	6.2	0.56	--	--	--	--	--	--	--	< 0.52	< 0.44	--	0.98	2.11	--	--	< 2.1	< 0.99
Chromium		18	6.3	--	--	--	--	--	--	--	--	10	--	--	62	5.7	38	--	--	--	--	--	--	--	21	23	--	49	49	--	--	15	31.6
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1010	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		440	2900	--	--	1600	570	184	1240	3840	2130	56	3050	554	1400	1300	860	--	--	--	--	--	312	4860	81	41	9340	1400	620	--	--	15	401
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		TP-12	TP-15	CES-TP-1	CES-TP-2	NW-1	NW-3	5E-2	5E-3	W-1	W-2	B-1	BOR-111	BOR-115	TP-4	TP-8	TP-13
Sample Depth (ft bgs):		5-7'	5-7	5-8	5-8	5-10	5-10	5-10	5-10	5-10	5-10	6	6-7	6-7	6-8	6-8	6-8
Sample Date:		5/2/01	5/2/01	8/25/95	8/25/95	3/19/13	3/19/13	3/20/13	3/19/13	3/20/13	3/20/13	5/31/07	1/4/06	1/4/06	5/2/01	5/2/01	5/2/01
Analyte	Units																
Mercury		0.79	30	--	--	--	--	--	--	--	--	0.18	--	--	61	0.83	0.96
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		5.5	27	--	--	--	--	--	--	--	--	43	--	--	4.8	< 4.8	< 4.7
Silver		0.77	7.3	--	--	--	--	--	--	--	--	< 1.4	--	--	8.7	4.3	1.2
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																
Acenaphthene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	13.1	0.5	<0.6	<1.2	<1.2
Acenaphthylene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	11.4	<0.2	<0.6	<1.2	<1.2
Anthracene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	60.4	1.1	<0.6	<1.2	2.1
Benzo(a)anthracene		1.7	<6.1	--	--	--	--	--	--	--	--	--	97.6	2.5	1.5	2.8	5.9
Benzo(a)pyrene		1.5	<6.1	--	--	--	--	--	--	--	--	--	42.2	2.2	1.4	2.2	5.2
Benzo(b)fluoranthene		2.6	<6.1	--	--	--	--	--	--	--	--	--	48.6	1.9	2.1	2.2	7.6
Benzo(e)pyrene		1.3	<6.1	--	--	--	--	--	--	--	--	--	--	--	1.2	1.7	3.8
Benzo(ghi)perylene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	26.5	1.4	0.85	1.2	2.8
Benzo(k)fluoranthene		1.2	<6.1	--	--	--	--	--	--	--	--	--	64.3	2.1	0.78	2.4	3
Chrysene		2	<6.1	--	--	--	--	--	--	--	--	--	104	3.1	1.6	2.9	6
Dibenzo(a,h)anthracene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	9.4	0.3	<0.6	<1.2	<1.2
Fluoranthene		4.1	<6.1	--	--	--	--	--	--	--	--	--	264	5.6	2.3	5.6	13
Fluorene		<1.1	<6.1	--	--	--	--	--	--	--	--	--	12.2	0.5	<0.6	<1.2	<1.2
Indeno(1,2,3-cd)pyrene		1.2	<6.1	--	--	--	--	--	--	--	--	--	31.2	1.3	0.97	1.3	3
Methylnaphthalene, 1-		<1.1	<6.1	--	--	--	--	--	--	--	--	--	--	--	<0.6	<1.2	<1.2
Methylnaphthalene, 2-		<1.1	<6.1	--	--	--	--	--	--	--	--	--	6.3	0.2	<0.6	<1.2	<1.2
Naphthalene		0.28	<0.36	--	--	--	--	--	--	--	--	--	4.1	0.3	0.32	0.44	0.31
Phenanthrene		2.7	<6.1	--	--	--	--	--	--	--	--	--	363	5.2	1	5.4	6.7
Pyrene		3.6	<6.1	--	--	--	--	--	--	--	--	--	229	6.5	2.1	4.7	10

Sample Location:		B218	BOR-111-1	BOR-111-2	BOR-111-2	BOR-14	BOR-112	BOR-117	CES-6	TP-7	BOR-114	B-8	BOR-116	BOR-111-1	BOR-111-2	CES-6	BOR-118
Sample Depth (ft bgs):		6 - 8	6-8	6-8	6-8	6-9	6.75-9.75	7-8	7-9	7-9	7-9	8	8-10	8-10	8-10	9-13	9.75-10
Sample Date:		12/17/12	3/20/13	3/20/13	3/20/13	5/3/01	1/4/06	1/4/06	12/18/96	5/2/01	1/4/06	5/31/07	1/4/06	3/20/13	3/20/13	12/18/96	1/4/06
Analyte	Units																
Mercury		--	--	--	--	--	--	--	< 0.32	< 0.24	--	0.8	1.16	--	--	< 1.3	1.55
Nickel		--	--	--	--	--	--	--	--	--	--	--	17.9	--	--	--	--
Selenium		--	--	--	--	--	--	--	< 6.5	< 4.4	--	29	< 7.11	--	--	< 26	< 9.82
Silver		--	--	--	--	--	--	--	< 0.52	< 0.44	--	< 1.1	9.07	--	--	< 2.1	< 0.99
Thallium		--	--	--	--	--	--	--	--	--	--	--	< 4.27	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	20	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	171	--	--	--	--
Other																	
Cyanide, total	mg/kg	<0.13	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																
Acenaphthene		--	--	--	--	<2.9	<0.2	0.9	--	<1.1	<0.2	0.5	<0.2	--	--	--	<0.2
Acenaphthylene		--	--	--	--	<2.9	<0.2	0.2	--	<1.1	<0.2	0.9	<0.2	--	--	--	<0.2
Anthracene		--	--	--	--	<2.9	<0.2	1.9	--	<1.1	<0.2	2.1	<0.2	--	--	--	<0.2
Benzo(a)anthracene		--	--	--	--	<2.9	0.2	<0.2	--	<1.1	<0.2	6.9	0.3	--	--	--	0.5
Benzo(a)pyrene		--	--	--	--	<2.9	0.2	2.7	--	<1.1	<0.2	4.5	0.3	--	--	--	0.4
Benzo(b)fluoranthene		--	--	--	--	<2.9	<0.2	1.7	--	<1.1	<0.2	4	0.2	--	--	--	0.4
Benzo(e)pyrene		--	--	--	--	<2.9	--	--	--	<1.1	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	<2.9	<0.2	<0.2	--	<1.1	<0.2	1.2	<0.2	--	--	--	<0.2
Benzo(k)fluoranthene		--	--	--	--	<2.9	<0.2	1.9	--	<1.1	<0.2	4.5	0.2	--	--	--	0.4
Chrysene		--	--	--	--	4.1	0.3	2	--	<1.1	<0.2	6.3	0.3	--	--	--	0.6
Dibenzo(a,h)anthracene		--	--	--	--	<2.9	<0.2	<0.2	--	<1.1	<0.2	0.9	<0.2	--	--	--	<0.2
Fluoranthene		--	--	--	--	<2.9	0.6	4.3	--	1.3	<0.2	14	0.2	--	--	--	1.1
Fluorene		--	--	--	--	<2.9	<0.2	0.9	--	<1.1	<0.2	0.6	<0.2	--	--	--	<0.2
Indeno(1,2,3-cd)pyrene		--	--	--	--	<2.9	<0.2	<0.2	--	<1.1	<0.2	0.9	<0.2	--	--	--	<0.2
Methylnaphthalene, 1-		--	--	--	--	<2.9	--	--	--	<1.1	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	<2.9	<0.2	0.5	--	<1.1	<0.2	<0.5	<0.2	--	--	--	<0.2
Naphthalene		--	--	--	--	<2.9	<0.2	0.3	--	<0.3	<0.2	<0.5	<0.2	--	--	--	<0.2
Phenanthrene		--	--	--	--	4	0.4	5.3	--	<1.1	<0.2	4.3	<0.2	--	--	--	0.7
Pyrene		--	--	--	--	7.2	0.6	4.6	--	1.2	<0.2	14	0.3	--	--	--	1

DRAFT

TABLE H-2

PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		RIZ-3	RIZ-4	RIZ-10	BOR-2	BOR-8	RIZ-4-1	RIZ-4-3	RIZ-4-4	NW-1	NW-3	SE-2	SE-3	W-2	BOR-113	RIZ-4-1	RIZ-4-3	RIZ-4-4	W-1	BOR-112	BOR-116	RIZ-4-1	RIZ-4-3	RIZ-4-4	S-3	S-4	S-38	S-39	S-40	S-41	S-42	S-43	S-44
Sample Depth (ft bgs):		10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-15	10-15	10-15	10-15	10-15	11	12-14	12-14	12-14	12.5-15	14	14-15	14-16	14-16	14-16	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:		3/27/01	3/28/01	4/2/01	3/27/01	3/30/01	3/19/13	3/18/13	3/18/13	3/19/13	3/19/13	3/20/13	3/19/13	3/20/13	1/4/06	3/19/13	3/18/13	3/18/13	3/20/13	1/4/06	1/4/06	3/19/13	3/18/13	3/18/13	6/29/04	6/29/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		< 0.92	< 13	< 0.97	--	< 1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		< 0.092	2	< 0.097	--	< 0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		< 0.92	< 13	< 0.97	--	< 1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		< 0.92	< 13	< 0.97	--	< 1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		< 0.14	< 1.9	< 0.14	--	< 0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		< 0.092	15	< 0.097	--	< 0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		< 0.46	< 6.3	< 0.48	--	< 0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		< 0.46	< 6.3	< 0.48	--	< 0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		< 0.46	47	< 0.48	--	< 0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		< 0.092	< 1.3	< 0.097	--	< 0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		< 0.14	11	< 0.14	--	< 0.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		< 0.092	< 1.3	< 0.097	--	< 0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		< 0.46	30	< 0.48	--	< 0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		< 0.46	11	< 0.48	--	< 0.55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		< 0.092	36	< 0.097	--	< 0.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		< 3.68	515	< 3.88	< 2.50	< 4.44	< 6.4	< 5.1	< 5.0	--	--	--	--	--	--	< 6.1	< 4.7	< 5.0	--	--	--	< 4.6	< 5.3	< 4.9	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		< 3.68	2260	< 3.88	< 2.50	< 4.44	< 6.4	< 5.1	< 5.0	--	--	--	--	--	--	< 6.1	< 4.7	< 5.0	--	--	--	< 4.6	< 5.3	< 4.9	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		< 3.68	1340	< 3.88	< 2.50	< 4.44	< 6.4	< 5.1	< 5.0	--	--	--	--	--	--	< 6.1	< 4.7	< 5.0	--	--	--	< 4.6	< 5.3	< 4.9	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		< 14.7	3040	< 15.4	< 12.2	< 15.4	< 11	< 9.9	< 10	--	--	--	--	--	--	< 11	< 9.9	< 11	--	< 37.7	< 104	< 10	< 11	< 11	< 48.2	< 7.41	< 444	602	< 145	< 7.25	< 37.4	< 37	< 143
C_{19}-C_{36} Aliphatics		262	21000	28	< 12.2	31.6	< 11	< 9.9	< 10	--	--	--	--	--	--	< 11	< 9.9	< 11	--	< 37.7	< 104	< 10	< 11	< 11	1490	267	2120	27500	297	27.4	163	94	314
C_{11}-C_{22} Aromatics		53.3	19200	34.6	< 12.2	< 15.4	< 21	< 20	< 21	--	--	--	--	--	--	< 21	< 20	< 21	--	< 37.7	< 104	< 20	< 21	< 21	676	51.4	725	2840	284	20.5	47.5	89.1	276
Acenaphthene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Acenaphthylene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Anthracene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Benzo(a)anthracene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.375	< 1.87	< 1.85	< 7.17
Benzo(a)pyrene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.393	< 1.87	< 1.85	< 7.17
Benzo(b)fluoranthene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Benzo(e)pyrene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Benzo(k)fluoranthene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Chrysene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.477	< 1.87	< 1.85	< 7.17
Dibenzo(a,h)anthracene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Fluoranthene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.805	< 1.87	< 1.85	< 7.17
Fluorene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Indeno(1,2,3-cd)pyrene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Methylnaphthalene, 1-		< 0.74	68	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		< 0.74	71	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Naphthalene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	< 0.362	< 1.87	< 1.85	< 7.17
Phenanthrene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.536	< 1.87	< 1.85	< 7.17
Pyrene		< 0.74	< 59	< 0.77	< 0.61	< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	< 0.4	--	--	--	< 2.41	< 0.370	< 22.2	< 21.5	< 7.25	0.721	< 1.87	< 1.85	< 7.17
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.4	< 2.2	< 2.2	< 2.1	< 2.1	< 2.2	3	< 2.2	< 2.1
Arsenic		9.5	4.4	50	6.4	5.5	--	--	--	14.8	23.4	13.8	47	71.1	--	--	--	--	9.6	< 6.28	23.1	--	--	--	4.8	10	5.7	3.5	3.9	10	11	9.4	4.5
Barium		100	24	21	12	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	44.9	--	--	--	31	79	43	22	37	20	66	50	32
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.27	0.78	< 0.22	< 0.21	< 0.21	0.32	< 0.22	< 0.22	< 0.21
Cadmium		< 1.2	< 0.93	< 0.60	< 0.97	< 0.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.73	--	--	--	< 0.48	< 0.44	0.51	< 0.43	0.56	< 0.43	2.4	1.5	0.48
Chromium		18	2.7	22	13	40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	44.6	--	--	--	17	41	22	12	21	20	34	84	27
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		220	98	640	12	180	--	--	--	95.1	66.3	111	2020	858	--	--	--	--	149	12.4	26.6	--	--	--	65	29	48	24	410	120	720	3300	510
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		RIZ-3	RIZ-4	RIZ-10	BOR-2	BOR-8	RIZ-4-1	RIZ-4-3	RIZ-4-4	NW-1	NW-3	SE-2	SE-3	W-2	BOR-113	RIZ-4-1	RIZ-4-3	RIZ-4-4	W-1	BOR-112	BOR-116	RIZ-4-1	RIZ-4-3	RIZ-4-4	S-3	S-4	S-38	S-39	S-40	S-41	S-42	S-43	S-44
Sample Depth (ft bgs):		10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-12	10-15	10-15	10-15	10-15	10-15	11	12-14	12-14	12-14	12.5-15	14	14-15	14-16	14-16	14-16	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5
Sample Date:		3/27/01	3/28/01	4/2/01	3/27/01	3/30/01	3/19/13	3/18/13	3/18/13	3/19/13	3/19/13	3/20/13	3/19/13	3/20/13	1/4/06	3/19/13	3/18/13	3/18/13	3/20/13	1/4/06	1/4/06	3/19/13	3/18/13	3/18/13	6/29/04	6/29/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04	9/9/04
Analyte	Units																																
Mercury		0.35	< 0.26	< 0.34	< 0.30	< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.022	--	--	--	< 0.10	< 0.09	< 0.09	< 0.08	< 0.08	< 0.08	< 0.09	0.11	< 0.07
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15	29	18	10	13	18	26	39	18
Selenium		< 2.9	< 2.3	< 2.4	< 2.4	< 2.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 17.3	--	--	--	< 2.4	< 2.2	< 2.2	< 2.1	< 2.1	< 2.2	< 4.5	< 2.2	< 2.1
Silver		< 0.58	< 0.46	< 0.60	< 0.49	< 0.61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.73	--	--	--	< 0.48	< 0.44	< 0.44	< 0.43	< 0.43	< 0.43	< 0.45	< 0.44	< 0.43
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 2.4	< 11	< 2.2	< 2.1	< 2.1	< 2.2	< 4.5	< 2.2	< 2.1
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	32	56	34	31	43	26	20	31	45
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	190	110	400	140	180	150	350	370	170
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Acenaphthylene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Anthracene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Benzo(a)anthracene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.375	<1.87	<1.85	<7.17
Benzo(a)pyrene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.393	<1.87	<1.85	<7.17
Benzo(b)fluoranthene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Benzo(e)pyrene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Benzo(k)fluoranthene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Chrysene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.477	<1.87	<1.85	<7.17
Dibenzo(a,h)anthracene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Fluoranthene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.805	<1.87	<1.85	<7.17
Fluorene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Indeno(1,2,3-cd)pyrene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Methylnaphthalene, 1-		<0.74	68	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		<0.74	71	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Naphthalene		<0.46	47	<0.48	<0.61	<0.55	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	<0.362	<1.87	<1.85	<7.17
Phenanthrene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.536	<1.87	<1.85	<7.17
Pyrene		<0.74	<59	<0.77	<0.61	<0.77	--	--	--	--	--	--	--	--	<0.24	--	--	--	--	<0.2	<0.4	--	--	--	<2.41	<0.37	<22.2	<21.5	<7.25	0.721	<1.87	<1.85	<7.17

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		RIZ-7	B/MW-208	B/MW-209	B/MW-209	B225	A-5-1	A-5-3	A-5-5	BOR-110	A-1	A-2	A-3	CES-1	CES-7	BOR-6	TP-10	A-5-2	CES-TP-7	CES-TP-8	ES TP-7 & TP	A-3	A-5	TP-11	B/MW-209	B221	B221	B222	B223	B224	B225	B226	B227
Sample Depth (ft bgs):		0-2	0 - 3	0 - 3	0 - 3	0 - 3	0-3	0-3	0-3	2-3	4	4	4	5-7	5-7	5-7	5-7	5-7	5-8	5-8	5-8	6	6	6-8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8
Sample Date:		3/29/01	12/18/12	12/18/12	12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	1/4/06	5/31/07	5/31/07	5/31/07	12/17/96	12/18/96	3/29/01	5/2/01	3/19/13	8/25/95	8/25/95	8/25/95	5/31/07	5/31/07	5/2/01	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.85	< 0.58	--	--	0.008	--	--	--	< 0.79	--	--	--	--	--	--	--	--	--
Benzene		< 0.077	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.085	< 0.058	--	--	< 0.007	--	--	--	< 0.079	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.85	< 0.58	--	--	< 0.007	--	--	--	< 0.79	--	--	--	--	--	--	--	--	--
Carbon disulfide		< 0.77	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.85	< 0.58	--	--	0.002	--	--	--	< 0.79	--	--	--	--	--	--	--	--	--
Chloroform		< 0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.13	0.14	--	--	< 0.007	--	--	--	< 0.12	--	--	--	--	--	--	--	--	--
Ethylbenzene		< 0.077	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.085	< 0.058	--	--	< 0.007	--	--	--	< 0.079	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.43	< 0.29	--	--	--	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--
Methylene Chloride		< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.43	< 0.29	--	--	0.01	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--
Naphthalene		< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	0.82	0.5	--	--	--	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--
Styrene		< 0.077	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.085	< 0.058	--	--	< 0.007	--	--	--	< 0.079	--	--	--	--	--	--	--	--	--
Toluene		< 0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.13	< 0.087	--	--	< 0.007	--	--	--	0.12	--	--	--	--	--	--	--	--	--
Trichloroethylene		< 0.077	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.085	0.45	--	--	< 0.007	--	--	--	< 0.079	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.43	< 0.29	--	--	--	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		< 0.38	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.43	< 0.29	--	--	--	--	--	--	< 0.40	--	--	--	--	--	--	--	--	--
Xylene, Total		< 0.077	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.085	< 0.058	--	--	< 0.007	--	--	--	< 0.079	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		< 3.04	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.42	< 2.32	--	--	--	--	--	--	< 3.18	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		< 3.04	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.42	< 2.32	--	--	--	--	--	--	< 3.18	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		< 3.04	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.42	< 2.32	--	--	--	--	--	--	< 3.18	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		< 11.4	--	--	--	--	--	--	--	< 179	< 23	--	< 22	--	--	< 27	28.5	--	--	--	--	--	< 25	< 12.8	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics		167	--	--	--	--	--	--	--	< 179	120	--	66	--	--	43.2	330	--	--	--	--	--	70	47.7	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics		72	--	--	--	--	--	--	--	1510	280	--	120	--	--	519	671	--	--	--	--	--	420	260	--	--	--	--	--	--	--	--	--
Acenaphthene		< 5.7	--	--	--	--	--	--	--	56	1.4	--	< 0.4	--	--	< 6.7	< 3.0	--	--	--	--	--	1.8	< 1.3	--	--	--	--	--	--	--	--	--
Acenaphthylene		< 5.7	--	--	--	--	--	--	--	3.2	< 0.5	--	< 0.4	--	--	< 6.7	< 3.0	--	--	--	--	--	< 0.5	< 1.3	--	--	--	--	--	--	--	--	--
Anthracene		< 5.7	--	--	--	--	--	--	--	86.7	3.6	--	0.6	--	--	16	< 3.0	--	--	--	--	--	4.1	< 1.3	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		< 5.7	--	--	--	--	--	--	--	79	8	--	2.4	--	--	26	5.3	--	--	--	--	--	12	2.3	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		< 5.7	--	--	--	--	--	--	--	54.1	6	--	2.2	--	--	20	4.4	--	--	--	--	--	9.3	2.1	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		< 5.7	--	--	--	--	--	--	--	42.4	7.4	--	2.4	--	--	27	6.1	--	--	--	--	--	11	2.8	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		< 5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	27	< 3.0	--	--	--	--	--	--	1.4	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		< 5.7	--	--	--	--	--	--	--	22.7	1.5	--	1.4	--	--	8.6	< 3.0	--	--	--	--	--	6.5	< 1.3	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		< 5.7	--	--	--	--	--	--	--	49.9	4.7	--	2.3	--	--	10	< 3.0	--	--	--	--	--	11	1.3	--	--	--	--	--	--	--	--	--
Chrysene		< 5.7	--	--	--	--	--	--	--	81	8.6	--	2.4	--	--	25	5.2	--	--	--	--	--	14	2.2	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		< 5.7	--	--	--	--	--	--	--	6.9	1.3	--	1.3	--	--	< 6.7	< 3.0	--	--	--	--	--	4.8	< 1.3	--	--	--	--	--	--	--	--	--
Fluoranthene		6.1	--	--	--	--	--	--	--	211	22	--	4.2	--	--	58	11	--	--	--	--	--	26	4.3	--	--	--	--	--	--	--	--	--
Fluorene		< 5.7	--	--	--	--	--	--	--	61.1	1.1	--	0.5	--	--	8.4	< 3.0	--	--	--	--	--	2.2	< 1.3	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		< 5.7	--	--	--	--	--	--	--	29.9	1.3	--	0.9	--	--	9.6	< 3.0	--	--	--	--	--	5	1.3	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		< 5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	< 6.7	< 3.0	--	--	--	--	--	--	< 1.3	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		< 5.7	--	--	--	--	--	--	--	12.5	< 0.5	--	< 0.4	--	--	< 6.7	< 3.0	--	--	--	--	--	< 0.5	< 1.3	--	--	--	--	--	--	--	--	--
Naphthalene		< 5.7	--	--	--	--	--	--	--	18.6	< 0.5	--	< 0.4	--	--	< 6.7	< 3.0	--	--	--	--	--	< 0.5	< 1.3	--	--	--	--	--	--	--	--	--
Phenanthrene		5.7	--	--	--	--	--	--	--	292	12	--	2.5	--	--	63	7.1	--	--	--	--	--	1.3	2.5	--	--	--	--	--	--	--	--	--
Pyrene		< 5.7	--	--	--	--	--	--	--	205	21	--	4.5	--	--	51	9.2	--	--	--	--	--	20	3.7	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	24	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	<0.110	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	<0.110	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	<0.110	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	<0.110	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.1	--	--	<0.110	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		13	42.1	11.2	14.3	412	83.4	78.2	56.5	141	26	64	13	200	9.9	240	140	97	--	--	52	63	--	31	--	783	981	522	18.1	114	23.9	211	462
Barium		57	--	--	--	--	--	--	--	--	75	720	47	30	16	140	120	--	--	--	42	1900	--	120	--	--	--	--	--	--	--	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		< 0.90	--	--	--	--	--	--	--	--	0.37	32	0.31	13	< 0.40	< 5.3	8	--	--	--	0.99	1.3	--	1.3	--	--	--	--	--	--	--	--	--
Chromium		22	--	--	--	--	--	--	--	--	18	7.2	16	17	14	25	9.2	--	--	--	8.7	6.7	--	31	--	--	--	--	--	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	70.3	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	81800	--	--	--	--	--	--	--	--	--	--	--
Lead		170	6520	292	166	9310	1040	862	903	3750	930	440	220	630	200	370	3600	152	--	--	7800	1900	--	480	--	1150	--	396	79.1	17.5	288	814	225
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	49	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2

PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		RIZ-7	B/MW-208	B/MW-209	B/MW-209	B225	A-5-1	A-5-3	A-5-5	BOR-110	A-1	A-2	A-3	CES-1	CES-7	BOR-6	TP-10	A-5-2	CES-TP-7	CES-TP-8	ES TP-7 & TP	A-3	A-5	TP-11	B/MW-209	B221	B221	B222	B223	B224	B225	B226	B227
Sample Depth (ft bgs):		0-2	0 - 3	0 - 3	0 - 3	0 - 3	0-3	0-3	0-3	2-3	4	4	4	5-7	5-7	5-7	5-7	5-7	5-8	5-8	5-8	6	6	6-8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8	6 - 8
Sample Date:		3/29/01	12/18/12	12/18/12	12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	1/4/06	5/31/07	5/31/07	5/31/07	12/17/96	12/18/96	3/29/01	5/2/01	3/19/13	8/25/95	8/25/95	8/25/95	5/31/07	5/31/07	5/2/01	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12
Analyte	Units																																
Mercury		0.84	--	--	--	--	--	--	--	--	1.77	0.81	0.75	1.5	0.78	1.6	4.1	--	--	--	3.8	0.48	--	0.76	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		< 2.2	--	--	--	--	--	--	--	--	20	40	17	< 8.1	< 5.0	< 26	33	--	--	--	71	41	--	< 5.0	--	--	--	--	--	--	--	--	--
Silver		< 0.45	--	--	--	--	--	--	--	--	< 1.1	22	< 1.0	< 0.65	< 0.40	< 5.3	6.1	--	--	--	0.59	1.4	--	0.86	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.14	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		<5.7	--	--	--	--	--	--	--	56	1.4	--	<0.4	--	--	<6.7	<3	--	--	--	--	<0.4	1.8	<1.3	--	--	--	--	--	--	--	--	--
Acenaphthylene		<5.7	--	--	--	--	--	--	--	3.2	<0.5	--	<0.4	--	--	<6.7	<3	--	--	--	--	<0.4	<0.5	<1.3	--	--	--	--	--	--	--	--	--
Anthracene		<5.7	--	--	--	--	--	--	--	86.7	3.6	--	0.6	--	--	16	<3	--	--	--	--	<0.4	4.1	<1.3	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		<5.7	--	--	--	--	--	--	--	79	8	--	2.4	--	--	26	5.3	--	--	--	--	<0.4	12	2.3	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		<5.7	--	--	--	--	--	--	--	54.1	6	--	2.2	--	--	20	4.4	--	--	--	--	<0.4	9.3	2.1	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		<5.7	--	--	--	--	--	--	--	42.4	7.4	--	2.4	--	--	27	6.1	--	--	--	--	<0.4	11	2.8	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		<5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	27	<3	--	--	--	--	--	--	1.4	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		<5.7	--	--	--	--	--	--	--	22.7	1.5	--	1.4	--	--	8.6	<3	--	--	--	--	<0.4	6.5	<1.3	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		<5.7	--	--	--	--	--	--	--	49.9	4.7	--	2.3	--	--	10	<3	--	--	--	--	<0.4	11	1.3	--	--	--	--	--	--	--	--	--
Chrysene		<5.7	--	--	--	--	--	--	--	81	8.6	--	2.4	--	--	25	5.2	--	--	--	--	<0.4	14	2.2	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		<5.7	--	--	--	--	--	--	--	6.9	1.3	--	1.3	--	--	<6.7	<3	--	--	--	--	<0.4	4.8	<1.3	--	--	--	--	--	--	--	--	--
Fluoranthene		6.1	--	--	--	--	--	--	--	211	22	--	4.2	--	--	58	11	--	--	--	--	<0.4	26	4.3	--	--	--	--	--	--	--	--	--
Fluorene		<5.7	--	--	--	--	--	--	--	61.1	1.1	--	0.5	--	--	8.4	<3	--	--	--	--	<0.4	2.2	<1.3	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		<5.7	--	--	--	--	--	--	--	29.9	1.3	--	0.9	--	--	9.6	<3	--	--	--	--	<0.4	5	1.3	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		<5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	<6.7	<3	--	--	--	--	--	--	<1.3	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		<5.7	--	--	--	--	--	--	--	12.5	<0.5	--	<0.4	--	--	<6.7	<3	--	--	--	--	<0.4	<0.5	<1.3	--	--	--	--	--	--	--	--	--
Naphthalene		<0.38	--	--	--	--	--	--	--	18.6	<0.5	--	<0.4	--	--	0.82	0.5	--	--	--	--	<0.4	<0.5	<0.4	--	--	--	--	--	--	--	--	--
Phenanthrene		5.7	--	--	--	--	--	--	--	292	12	--	2.5	--	--	63	7.1	--	--	--	--	<0.4	1.3	2.5	--	--	--	--	--	--	--	--	--
Pyrene		<5.7	--	--	--	--	--	--	--	205	21	--	4.5	--	--	51	9.2	--	--	--	--	<0.4	20	3.7	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		B228	B229	A-5-1	A-5-1	A-5-3	A-5-4	A-5-5	A-5-6	A-5-7	A-5-2	CES-1	CES-7	A-1	A-1	A-2	A-4	A-5	A-5	B221	B222	B223	B224	B225	B226	B227	B228	B229	A-5-1	A-5-3	A-5-4	A-5-5	A-5-6
Sample Depth (ft bgs):		6 - 8	6 - 8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	7-8.5	7-9	7-9	8	8	8	8	8	8	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8-10	8-10	8-10	8-10	8-10
Sample Date:		12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	12/17/96	12/18/96	5/31/07	5/31/07	5/31/07	5/31/07	5/31/07	5/31/07	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	3.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	3.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	3.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	6.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	< 0.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	6.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	9.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	< 25	--	< 24	< 26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	35	--	< 24	170	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	66	--	< 24	83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	0.9	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	2.1	--	< 0.5	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	1.2	--	< 0.5	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	1.4	--	< 0.5	0.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	1.4	--	< 0.5	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	1.8	--	< 0.5	1.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	4.6	--	< 0.5	2.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	< 0.5	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	3.3	--	< 0.5	< 0.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	3.5	--	< 0.5	2.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	< 160	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	< 160	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	< 160	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	< 160	< 100	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	ND	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		8.9	896	1760	2950	544	15.9	73.6	162	221	24.2	180	5.8	32	80.4	<3.0	--	216000	165000	43.2	8	236	4.3	72.9	107	11	<0.97	13.9	124	107	111	18.5	6
Barium		--	--	--	--	--	--	--	--	--	--	15	18	66	--	8.8	--	400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	--	--	14	< 0.40	2.7	--	<0.30	--	130	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium		--	--	--	--	--	--	--	--	--	--	15	9	7	--	14	--	11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	36400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		48.9	43300	11500	7330	1380	93.6	1180	4300	720	81.9	280	76	19300	10700	8.9	--	153000	65400	5.3	89.1	117	9.4	112	43.9	59.2	8.2	363	321	135	30.9	30.2	44.5
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		B228	B229	A-5-1	A-5-1	A-5-3	A-5-4	A-5-5	A-5-6	A-5-7	A-5-2	CES-1	CES-7	A-1	A-1	A-2	A-4	A-5	A-5
Sample Depth (ft bgs):		6 - 8	6 - 8	6-8	6-8	6-8	6-8	6-8	6-8	6-8	7-8.5	7-9	7-9	8	8	8	8	8	8
Sample Date:		12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	12/17/96	12/18/96	5/31/07	5/31/07	5/31/07	5/31/07	5/31/07	5/31/07
Analyte	Units																		
Mercury		--	--	--	--	--	--	--	--	--	--	1.3	< 0.25	1.8	--	< 0.13	--	21.3	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	< 8.1	< 5.0	40	--	< 12	--	99	--
Silver		--	--	--	--	--	--	--	--	--	--	< 0.65	< 0.40	5.1	--	< 1.2	--	21	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																			
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																		
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	<0.5	<0.5	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	<0.4	--	<0.5	<0.5	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	2.1	--	<0.5	<0.5	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	3.6	--	<0.5	1.2	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	3	--	<0.5	0.9	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	1.5	--	<0.5	0.7	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	<0.5	<0.5	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	3.9	--	<0.5	0.8	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	3.7	--	<0.5	1.3	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	<0.4	--	<0.5	<0.5	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	6.5	--	<0.5	2.2	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	0.9	--	<0.5	<0.5	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	0.8	--	<0.5	<0.5	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	<0.4	--	<0.5	<0.5	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	<0.5	<0.5	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	6.1	--	<0.5	<0.5	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	9.1	--	<0.5	2.3	--	--

Sample Location:		B221	B222	B223	B224	B225	B226	B227	B228	B229	A-5-1	A-5-3	A-5-4	A-5-5	A-5-6
Sample Depth (ft bgs):		8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8 - 10	8-10	8-10	8-10	8-10	8-10
Sample Date:		12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	12/18/12	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13
Analyte	Units														
Mercury		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other															
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg														
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		A-5-7	A-5-2	A-5-2	A-5-4	A-5-6	A-5-7	C-4	C-2	C-2	S-10	S-11	S-12	S-13	S-14	S-15	S-16	S-17	S-18	S-19	S-20	S-21	S-22	S-23	S-24	S-25	S-26	S-26	B217	TP-14	BOR-11	BOR-12	CES-3-A
Sample Depth (ft bgs):		8-10	8.5-10	10-12	10-12	10-12	10-12	5	6		0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0 - 2	0-3	0-3	0-3	0-3
Sample Date:		3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	5/31/07	5/31/07	5/31/07	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	12/17/12	5/2/01	5/3/01	5/3/01	12/7/05
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	< 0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.49	< 0.46	< 0.51	< 14.2
Benzene		--	--	--	--	--	--	--	--	--	< 0.049	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.049	< 0.046	< 0.051	< 0.284
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	< 0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.49	< 0.46	< 0.51	< 5.68
Carbon disulfide		--	--	--	--	--	--	--	--	--	< 0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.49	< 0.46	< 0.51	< 1.42
Chloroform		--	--	--	--	--	--	--	--	--	< 0.074	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.073	< 0.070	< 0.076	< 0.568
Ethylbenzene		--	--	--	--	--	--	--	--	--	< 0.049	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.049	< 0.046	< 0.051	< 0.284
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	< 0.23	< 0.25	< 0.284
Methylene Chloride		--	--	--	--	--	--	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	< 0.23	< 0.25	< 2.84
Naphthalene		--	--	--	--	--	--	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.87	< 0.23	0.28	< 1.42
Styrene		--	--	--	--	--	--	--	--	--	< 0.049	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.049	< 0.046	< 0.051	< 0.284
Toluene		--	--	--	--	--	--	--	--	--	< 0.074	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.073	< 0.070	< 0.076	< 0.284
Trichloroethylene		--	--	--	--	--	--	--	--	--	< 0.049	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.049	< 0.046	< 0.051	< 0.284
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	< 0.23	< 0.25	0.318
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.24	< 0.23	< 0.25	< 0.284
Xylene, Total		--	--	--	--	--	--	--	--	--	< 0.049	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.049	< 0.046	0.075	< 0.568
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	< 1.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.95	< 1.86	< 2.03	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	< 1.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.95	< 1.86	< 2.03	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	< 1.98	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 1.95	< 1.86	< 2.03	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	< 179	--	< 10.4	< 7.09	< 7.49	< 13.6	< 15.9	118	< 8.33	< 15.2	< 6.94	15.4	21.3	< 7.94	< 8.23	< 52.9	< 7.17	< 6.80	313	< 13.9	--	27.5	< 10.6	< 11.1	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	< 179	--	78.3	17.5	18.5	34.8	< 15.9	477	104	27.1	108	1670	128	78	50.1	826	54.9	81.6	1790	137	--	50.5	39.1	117	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	1510	--	43.6	10.7	< 7.49	54.7	46.3	117	52.4	35	35.2	252	358	33.9	28.7	220	31.4	51.6	456	< 13.9	--	400	19.9	208	--
Acenaphthene		--	--	--	--	--	--	--	56	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	1.7	< 0.53	< 5.6	--
Acenaphthylene		--	--	--	--	--	--	--	3.2	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	1.2	< 0.53	< 5.6	--
Anthracene		--	--	--	--	--	--	--	86.7	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	3.2	< 0.53	< 5.6	--
Benzo(a)anthracene		--	--	--	--	--	--	--	79	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	3.59	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	8	< 0.53	< 5.6	--
Benzo(a)pyrene		--	--	--	--	--	--	--	54.1	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	1.35	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	4.9	< 0.53	< 5.6	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	42.4	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	2.63	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	5.4	< 0.53	< 5.6	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	< 5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8	< 0.53	< 5.6	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	22.7	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	1.12	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	3.4	< 0.53	< 5.6	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	49.9	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	2.61	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	6.3	< 0.53	< 5.6	--
Chrysene		--	--	--	--	--	--	--	81	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	0.438	< 0.758	< 0.347	< 0.758	3.95	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	9.4	< 0.53	< 5.6	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	6.9	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	0.464	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	1.6	< 0.53	< 5.6	--
Fluoranthene		--	--	--	--	--	--	--	211	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	0.548	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	2.89	< 0.358	0.459	2.19	< 0.694	--	14	< 0.53	< 5.6	--
Fluorene		--	--	--	--	--	--	--	61.1	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	2.4	< 0.53	< 5.6	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	29.9	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	1.18	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	3.4	< 0.53	< 5.6	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	< 5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4	< 0.53	< 5.6	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	12.5	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	3.6	< 0.53	< 5.6	--
Naphthalene		--	--	--	--	--	--	--	18.6	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	3.27	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	3.4	< 0.53	< 5.6	--
Phenanthrene		--	--	--	--	--	--	--	292	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	< 0.417	< 0.758	< 0.347	< 0.758	1.68	< 0.397	< 0.412	< 2.64	< 0.358	< 0.340	< 1.79	< 0.694	--	14	< 0.53	< 5.6	--
Pyrene		--	--	--	--	--	--	--	205	--	< 5.2	< 0.355	< 0.374	< 0.680	< 0.794	< 2.11	0.524	< 0.758	< 0.347	< 0.758	< 0.366	< 0.397	< 0.412	2.88	< 0.358	0.479	1.94	< 0.694	--	16	< 0.53	< 5.6	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	150
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.121
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	< 2.1	< 2.2	< 2.0	< 2.4	< 2.5	< 2.5	< 2.3	< 2.1	< 2.2	28	< 2.3	5.2	< 3.2	< 2.1	< 2.0	2.9	< 2.1	--	--	--	--	--
Arsenic		42.8	5.1	33.7	9.9	18.1	9.8	511	141	460	7.3	6.6	2.8	3.5	4.2	3.9	3.6	4.8	2.3	3.3	100	5.6	6.6	12	3.7	3.8	14	3.7	18.6	25	3.2	19	264
Barium		--	--	--	--	--	--	--	--	150	19	18	21	26	24	18	33	33	30	19	13	37	38	120	30	21	170	33	--	53	19	68	--
Beryllium		--	--	--	--	--	--	--	--	--	--	0.22	0.24	0.31	0.26	0.26	0.26	0.23	< 0.21	0.24	< 0.22	0.45	0.28	0.94	0.36	0.28	0.4	0.26	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	2.1	< 0.41	< 0.42	< 0.45	< 0.41	< 0.47	< 0.50	< 0.50	< 0.45	< 0.42	< 0.44	< 0.44	< 0.47	< 0.49	< 0.63	< 0.43	< 0.40	6.2	< 0.42	--	< 0.44	< 0.42	< 0.44	1.02
Chromium		--	--	--	--	--	--	--	--	8.4	20	40	24	16	11	7.8	16	40	15	10	4.5	10	34	38	9.8	8.1	76	19	--	11	20	18	20.6
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		9	10.5	214	49.3	1020	16.8	1120	3750	360	5.9	11	8.1	24	12	18	22	240	41	16	1000	16	25	100	12	19	590	15	118	100	< 2.1	490	726
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		A-5-7	A-5-2	A-5-2	A-5-4	A-5-6	A-5-7	C-4	C-2	C-2	S-10	S-11	S-12	S-13	S-14	S-15	S-16	S-17	S-18	S-19	S-20	S-21	S-22	S-23	S-24	S-25	S-26	S-26	B217	TP-14	BOR-11	BOR-12	CES-3-A
Sample Depth (ft bgs):		8-10	8.5-10	10-12	10-12	10-12	10-12	5	6		0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0 - 2	0-3	0-3	0-3	0-3
Sample Date:		3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	3/19/13	5/31/07	5/31/07	5/31/07	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	6/29/04	12/17/12	5/2/01	5/3/01	5/3/01	12/7/05
Analyte	Units																																
Mercury		--	--	--	--	--	--	--	--	0.65	< 0.25	< 0.09	< 0.09	< 0.08	< 0.1	< 0.1	< 0.10	< 0.08	< 0.09	0.09	2.9	< 0.09	< 0.10	0.29	< 0.09	< 0.08	0.36	< 0.08	--	0.35	< 0.24	0.29	0.402
Nickel		--	--	--	--	--	--	--	--	--	--	67	25	14	7.9	7.1	14	26	10	9.7	3.1	8.3	28	33	17	6.5	61	16	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	48	< 4.1	< 2.1	< 2.2	< 2.0	< 2.4	< 2.5	< 2.5	< 2.3	< 2.1	< 2.2	< 22	3.3	< 2.4	< 3.2	< 2.1	< 2.0	< 2.1	< 2.1	--	15	< 4.2	< 4.4	--
Silver		--	--	--	--	--	--	--	--	< 1.3	< 0.41	< 0.42	< 0.45	< 0.41	< 0.47	< 0.50	< 0.50	< 0.45	< 0.42	< 0.44	3.6	< 0.47	< 0.49	< 0.63	< 0.43	< 0.4	< 0.43	< 0.42	--	1.8	< 0.42	1.4	--
Thallium		--	--	--	--	--	--	--	--	--	--	< 2.1	< 2.2	< 2.0	< 2.4	< 2.5	< 2.5	< 11	< 2.1	< 2.2	< 22	< 2.3	< 12	< 16	< 2.1	< 2.0	< 11	< 2.1	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	35	37	29	18	22	33	35	34	23	7.7	22	37	66	22	18	44	39	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	88	55	80	30	38	94	350	67	50	82	41	140	340	53	39	430	530	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.6
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	56	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	1.7	<0.53	<5.6	--
Acenaphthylene		--	--	--	--	--	--	--	3.2	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	1.2	<0.53	<5.6	--
Anthracene		--	--	--	--	--	--	--	86.7	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	3.2	<0.53	<5.6	--
Benzo(a)anthracene		--	--	--	--	--	--	--	79	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	3.59	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	8	<0.53	<5.6	--
Benzo(a)pyrene		--	--	--	--	--	--	--	54.1	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	1.35	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	4.9	<0.53	<5.6	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	42.4	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	2.63	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	5.4	<0.53	<5.6	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	<5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.8	<0.53	<5.6	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	22.7	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	1.12	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	3.4	<0.53	<5.6	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	49.9	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	2.61	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	6.3	<0.53	<5.6	--
Chrysene		--	--	--	--	--	--	--	81	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	0.438	<0.758	<0.347	<0.758	3.95	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	9.4	<0.53	<5.6	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	6.9	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	0.464	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	1.6	<0.53	<5.6	--
Fluoranthene		--	--	--	--	--	--	--	211	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	0.548	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	2.89	<0.358	0.459	2.19	<0.694	--	14	<0.53	<5.6	--
Fluorene		--	--	--	--	--	--	--	61.1	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	2.4	<0.53	<5.6	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	29.9	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	1.18	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	3.4	<0.53	<5.6	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	<5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4	<0.53	<5.6	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	12.5	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	3.6	<0.53	<5.6	--
Naphthalene		--	--	--	--	--	--	--	18.6	--	<0.25	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	3.27	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	3.4	<0.23	0.28	<1.42
Phenanthrene		--	--	--	--	--	--	--	292	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	<0.417	<0.758	<0.347	<0.758	1.68	<0.397	<0.412	<2.64	<0.358	<0.34	<1.79	<0.694	--	14	<0.53	<5.6	--
Pyrene		--	--	--	--	--	--	--	205	--	<5.2	<0.355	<0.374	<0.68	<0.794	<2.11	0.524	<0.758	<0.347	<0.758	<0.366	<0.397	<0.412	2.88	<0.358	0.479	1.94	<0.694	--	16	<0.53	<5.6	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		CES-3-B	B/MW-205	B216	C-2-1	CES-2-1	SHORE-1	SHORE-2	SHORE-3	SHORE-4	SHORE-5	SHORE-6	SHORE-7	SHORE-8	SHORE-9	W-3	W-4	W-5	W-6	CES-3-C	CES-3-D	CES-2-A	CES-2-B	CES-2-C	CES-2-D	TP301	BOR-107	CES-3-A	CES-3-B	C-14	BOR-109-1	CES-3-C	CES-3-D
Sample Depth (ft bgs):		0-3	0 - 3	0 - 3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-4	0-4	0-4	0-4	0-4	0-4	0-5	3-5	3-8	3-8	4	4-8	4-8	4-8
Sample Date:		12/7/05	12/14/12	12/17/12	3/14/13	3/15/13	3/14/13	3/15/13	3/15/13	3/14/13	3/15/13	3/15/13	3/14/13	3/14/13	3/14/13	3/15/13	3/18/13	3/15/13	3/18/13	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	12/7/05	4/19/13	1/4/06	12/7/05	12/7/05	5/31/07	3/20/13	12/7/05	12/7/05
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.39	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.27	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.39	--	--	--	--	< 0.19	--	--	--	0.18	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.41	--	--	--	--	< 0.37	--	--	--	0.62	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.42	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.41	--	--	--	--	< 0.37	--	--	--	< 0.35	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.58	--	--	--	--	< 0.19	--	--	--	0.3	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	< 0.19	--	--	--	< 0.18	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.74	--	--	--	--	< 0.19	--	--	--	0.18	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.71	--	--	--	--	< 0.19	--	--	--	0.27	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 39.4	--	--	< 22	--	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 39.4	--	--	110	--	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 39.4	--	--	99	--	--	--
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	< 0.4	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	< 0.4	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	0.4	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	1.7	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	1.1	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	1.7	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	0.7	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	1.4	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	1.8	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	0.4	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	4.2	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	< 0.4	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	0.5	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	< 0.4	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	< 0.4	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	2.1	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	3.4	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		190	9	4.8	97.9	--	6	8.9	8.1	39.6	4.4	15.6	5.5	5.7	13.8	7	14.2	17.3	45	52.4	60.3	150	135	270	38.9	101	< 6.57	6.15	10.3	24	36	< 5.28	8.47
Barium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.9	--	--	100	< 0.50	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.09	--	--	< 0.26	< 0.25	--	--
Chromium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	18.8	--	--	21	< 1.5	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		2000	148	20.4	1220	50.4	--	--	--	--	--	--	--	--	--	50.7	368	179	118	2470	1960	1120	307	3520	67.8	949	3.67	75.9	46.6	380	4.1	78.9	105
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		CES-3-B	B/MW-205	B216	C-2-1	CES-2-1	5HORE-1	5HORE-2	5HORE-3	5HORE-4	5HORE-5	5HORE-6
Sample Depth (ft bgs):		0-3	0 - 3	0 - 3	0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-3
Sample Date:		12/7/05	12/14/12	12/17/12	3/14/13	3/15/13	3/14/13	3/15/13	3/15/13	3/14/13	3/15/13	3/15/13
Analyte	Units											
Mercury		--	--	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--
Other												
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg											
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--

Sample Location:		5HORE-7	5HORE-8	5HORE-9	W-3	W-4	W-5	W-6	CES-3-C	CES-3-D	CES-2-A	CES-2-B
Sample Depth (ft bgs):		0-3	0-3	0-3	0-3	0-3	0-3	0-3	0-4	0-4	0-4	0-4
Sample Date:		3/14/13	3/14/13	3/14/13	3/15/13	3/18/13	3/15/13	3/18/13	12/7/05	12/7/05	12/7/05	12/7/05
Analyte	Units											
Mercury		--	--	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--
Other												
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg											
Acenaphthene		--	--	--	--	--	--	--	<0.2	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	<0.2	--	--	--
Anthracene		--	--	--	--	--	--	--	<0.2	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	0.39	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	0.27	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	0.39	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	<0.2	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	<0.2	--	--	--
Chrysene		--	--	--	--	--	--	--	0.42	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	<0.2	--	--	--
Fluoranthene		--	--	--	--	--	--	--	0.58	--	--	--
Fluorene		--	--	--	--	--	--	--	<0.2	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	<0.2	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	<0.2	--	--	--
Naphthalene		--	--	--	--	--	--	--	<0.2	--	--	--
Phenanthrene		--	--	--	--	--	--	--	0.74	--	--	--
Pyrene		--	--	--	--	--	--	--	0.71	--	--	--

Sample Location:		CES-2-C	CES-2-D	TP301	BOR-107	CES-3-A	CES-3-B	C-14	BOR-109-1	CES-3-C	CES-3-D
Sample Depth (ft bgs):		0-4	0-4	0-5	3-5	3-8	3-8	4	4-8	4-8	4-8
Sample Date:		12/7/05	12/7/05	4/19/13	1/4/06	12/7/05	12/7/05	5/31/07	3/20/13	12/7/05	12/7/05
Analyte	Units										
Mercury		--	--	--	< 0.010	--	--	14.2	< 0.10	--	--
Nickel		--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	< 6.57	--	--	29	< 10.0	--	--
Silver		--	--	--	< 0.66	--	--	< 1.1	< 1.00	--	--
Thallium		--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--
Other											
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg										
Acenaphthene		--	<0.19	--	<0.2	--	<0.18	<0.4	--	--	--
Acenaphthylene		--	<0.19	--	<0.2	--	<0.18	<0.4	--	--	--
Anthracene		--	<0.19	--	<0.2	--	<0.18	0.4	--	--	--
Benzo(a)anthracene		--	<0.19	--	<0.2	--	<0.18	1.7	--	--	--
Benzo(a)pyrene		--	<0.19	--	<0.2	--	<0.18	1.1	--	--	--
Benzo(b)fluoranthene		--	<0.19	--	<0.2	--	0.18	1.7	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	<0.19	--	<0.2	--	<0.18	0.7	--	--	--
Benzo(k)fluoranthene		--	<0.19	--	<0.2	--	<0.18	1.4	--	--	--
Chrysene		--	<0.19	--	<0.2	--	<0.18	1.8	--	--	--
Dibenzo(a,h)anthracene		--	<0.19	--	<0.2	--	<0.18	0.4	--	--	--
Fluoranthene		--	<0.19	--	<0.2	--	0.3	4.2	--	--	--
Fluorene		--	<0.19	--	<0.2	--	<0.18	<0.4	--	--	--
Indeno(1,2,3-cd)pyrene		--	<0.19	--	<0.2	--	<0.18	0.5	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	<0.19	--	<0.2	--	<0.18	<0.4	--	--	--
Naphthalene		--	<0.19	--	<0.2	--	<0.18	<0.4	--	--	--
Phenanthrene		--	<0.19	--	<0.2	--	0.18	2.1	--	--	--
Pyrene		--	<0.19	--	<0.2	--	0.27	3.4	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location: Sample Depth (ft bgs): Sample Date: Analyte	Units	CES-2-A 4-8 12/7/05	CES-2-B 4-8 12/7/05	CES-2-C 4-8 12/7/05	CES-2-D 4-8 12/7/05	BOR-109-2 4-8 3/20/13	BOR-109-3 4-8 3/15/13	BOR-102 4.5 1/13/06	CES-4 5-7 12/18/96	RIZ-1 5-7 3/26/01	RIZ-2 5-7 3/26/01	BOR-1 5-7 3/26/01	B215 5 - 7 12/17/12	W-5 5-7 3/15/13	Shore 6 5-7.5 3/15/13	CES-TP-3 5-8 8/25/95	CES-TP-4 5-8 8/25/95	CES-TP-5 5-8 8/25/95	CES-TP-6 5-8 8/25/95	ES TP-5 & TP 5-8 8/25/95	CES-3 5-9 12/17/96	CES-5 5-9 12/18/96	C-2-1 5-10 3/14/13	SHORE-1 5-10 3/14/13	SHORE-2 5-10 3/15/13	SHORE-3 5-10 3/15/13	SHORE-4 5-10 3/14/13	SHORE-5 5-10 3/15/13	SHORE-6 5-10 3/15/13	SHORE-7 5-10 3/14/13	SHORE-8 5-10 3/14/13	SHORE-9 5-10 3/14/13	W-3 5-10 3/15/13
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	< 0.88	< 0.86	--	--	--	--	0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	< 0.088	< 0.086	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	< 0.88	< 0.86	--	--	--	--	0.025	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	< 0.88	< 0.86	--	--	--	--	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	< 0.13	< 0.13	--	--	--	--	< 0.007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	< 0.088	< 0.086	--	--	--	--	0.014	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	< 0.44	< 0.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	< 0.44	< 0.43	--	--	--	--	0.022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	5.1	< 0.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	< 0.088	< 0.086	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	< 0.13	< 0.13	--	--	--	--	0.003	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	< 0.088	< 0.086	--	--	--	--	< 0.007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	< 0.44	< 0.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	< 0.44	< 0.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	< 0.088	< 0.086	--	--	--	--	0.002	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	< 3.51	< 3.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	< 3.51	< 3.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	< 3.51	< 3.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	< 0.37	--	--	--	< 0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	< 0.37	--	--	--	< 0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	< 0.19	--	--	--	< 0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	--	--	87.6	< 13.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	--	--	128	30.6	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	--	--	423	57.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	9.9	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	10	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	< 5.7	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	6.8	< 0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	< 210	< 180	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	< 210	< 180	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	< 210	< 180	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	< 210	< 180	--	--	--	--	--	--	--	--	--	--	--	< 130	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	360	280	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	360	280	--	--	--	--	--	--	30	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	<0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	0.339	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	0.203	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	<0.12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	0.542	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		77.1	26.2	10.1	73.5	915	16.6	223	9.4	6.7	230	61	--	681	< 0.99	346	--	140	--	--	1400	140	21.5	127	147	52.4	95.4	521	94.6	66.1	186	464	156
Barium		--	--	--	--	--	--	--	30	16	7.2	70	--	--	--	--	--	99	--	--	330	8	--	--	--	--	--	--	--	--	--	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	< 0.85	< 0.70	< 5.6	< 1.0	--	--	--	--	--	5.3	--	--	2	< 0.51	--	--	--	--	--	--	--	--	--	--	--
Chromium		--	--	--	--	--	--	--	24	18	10	34	--	--	--	--	--	0.96	--	--	15	1	--	--	--	--	--	--	--	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	29.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		176	36.4	32.7	541	--	--	20.5	130	31	1500	110	--	6590	11.8	--	--	650	--	--	880	21	45.3	195	--	--	5490	1120	691	3560	1620	108	10200
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		CES-2-A	CES-2-B	CES-2-C	CES-2-D	BOR-109-2	BOR-109-3	BOR-102	CES-4	RIZ-1	RIZ-2	BOR-1	B215	W-5	Shore 6	CES-TP-3	CES-TP-4	CES-TP-5	CES-TP-6	ES TP-5 & TP	CES-3	CES-5	C-2-1	SHORE-1	SHORE-2	SHORE-3	SHORE-4	SHORE-5	SHORE-6	SHORE-7	SHORE-8	SHORE-9	W-3
Sample Depth (ft bgs):		4-8	4-8	4-8	4-8	4-8	4-8	4.5	5-7	5-7	5-7	5-7	5 - 7	5-7	5-7.5	5-8	5-8	5-8	5-8	5-8	5-9	5-9	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Sample Date:		12/7/05	12/7/05	12/7/05	12/7/05	3/20/13	3/15/13	1/13/06	12/18/96	3/26/01	3/26/01	3/26/01	12/17/12	3/15/13	3/15/13	8/25/95	8/25/95	8/25/95	8/25/95	8/25/95	12/17/96	12/18/96	3/14/13	3/14/13	3/15/13	3/15/13	3/14/13	3/15/13	3/15/13	3/14/13	3/14/13	3/14/13	3/15/13
Analyte	Units																																
Mercury		--	--	--	--	--	--	--	< 0.53	< 0.44	3	0.6	--	--	--	--	--	1.4	--	--	2.2	< 0.32	--	--	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	< 11	< 8.8	< 28	< 2.6	--	--	--	--	--	< 20	--	--	< 6.3	< 6.3	--	--	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	--	--	< 0.85	< 0.70	18	< 0.52	--	--	--	--	--	< 0.4	--	--	3	< 0.51	--	--	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	0.23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	<0.19	--	--	--	<0.25	--	--	9.9	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	<0.19	--	--	--	<0.25	--	--	10	<0.43	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	<0.19	--	--	--	<0.25	--	--	<5.7	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	<0.19	--	--	--	<0.25	--	--	6.8	<0.66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		W-4	W-6	TP301	TP302	C-18	C-22	C-22	TP-6	CES-2-1	CES-2-2	B217	CES-2	CES-4	C-8	C-21	C-21	CES-2-1	CES-2-2	CES-2-3	BOR-103	MW301D	MW302D	BOR-106	CES-2	CES-3	MW301D	MW302D	BOR-101	BOR-107	RIZ-102	BOR-109-1	C-2-1
Sample Depth (ft bgs):		5-10	5-10	5-10	5-10	6	6	6	6-8	6-8	6-8	6 - 9	7-9	7-9	8	8	8	8-10	8-12	8-12	9	9-9.5	9-9.5	9-10	9-11	9-11	9.5-11	9.5-11	10	10	10-12	10-12	10-15
Sample Date:		3/18/13	3/18/13	4/19/13	4/19/13	5/31/07	5/31/07	5/31/07	5/2/01	3/15/13	3/15/13	12/17/12	12/17/96	12/18/96	5/31/07	5/31/07	5/31/07	3/15/13	3/15/13	3/20/13	1/13/06	6/7/13	6/10/13	1/13/06	12/17/96	12/17/96	6/7/13	6/10/13	1/13/06	1/4/06	12/5/05	3/20/13	3/14/13
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	< 1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	< 0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	< 1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	< 1.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	< 0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	< 0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	< 0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	< 0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	< 0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	< 0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	< 0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	< 0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	< 0.68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	< 0.14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	< 5.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	< 5.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	< 5.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	68	--	--	27.5	--	--	--	--	--	--	< 23	--	--	--	--	< 195	--	--	< 42.2	--	--	--	--	--	< 33.7	< 13.9	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	840	--	--	111	--	--	--	--	--	--	340	--	--	--	--	< 195	--	--	< 42.2	--	--	--	--	--	< 33.7	201	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	210	--	--	112	--	--	--	--	--	--	180	--	--	--	--	219	--	--	< 42.2	--	--	--	--	--	41.3	< 13.9	--	--
Acenaphthene		--	--	--	--	< 0.5	--	--	< 0.63	--	--	--	--	--	--	< 0.5	--	--	--	--	1	--	--	< 0.2	--	--	--	--	--	0.2	< 0.694	--	--
Acenaphthylene		--	--	--	--	< 0.5	--	--	< 0.63	--	--	--	--	--	--	< 0.5	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	< 0.2	< 0.694	--	--
Anthracene		--	--	--	--	< 0.5	--	--	< 0.63	--	--	--	--	--	--	0.6	--	--	--	--	1.8	--	--	< 0.2	--	--	--	--	--	0.4	< 0.694	--	--
Benzo(a)anthracene		--	--	--	--	2.1	--	--	< 0.63	--	--	--	--	--	--	2.1	--	--	--	--	1.8	--	--	< 0.2	--	--	--	--	--	1.1	< 0.694	--	--
Benzo(a)pyrene		--	--	--	--	0.8	--	--	< 0.63	--	--	--	--	--	--	1.2	--	--	--	--	1.1	--	--	< 0.2	--	--	--	--	--	0.9	< 0.694	--	--
Benzo(b)fluoranthene		--	--	--	--	3.3	--	--	< 0.63	--	--	--	--	--	--	2.8	--	--	--	--	1.3	--	--	< 0.2	--	--	--	--	--	1	< 0.694	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	< 0.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	0.7	--	--	< 0.63	--	--	--	--	--	--	0.9	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	0.6	< 0.694	--	--
Benzo(k)fluoranthene		--	--	--	--	2.2	--	--	< 0.63	--	--	--	--	--	--	3	--	--	--	--	1.5	--	--	< 0.2	--	--	--	--	--	1.1	< 0.694	--	--
Chrysene		--	--	--	--	3.5	--	--	< 0.63	--	--	--	--	--	--	2.6	--	--	--	--	1.8	--	--	< 0.2	--	--	--	--	--	1.4	< 0.694	--	--
Dibenzo(a,h)anthracene		--	--	--	--	0.7	--	--	< 0.63	--	--	--	--	--	--	1.1	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	0.1	< 0.694	--	--
Fluoranthene		--	--	--	--	< 0.5	--	--	< 0.63	--	--	--	--	--	--	4.4	--	--	--	--	3.2	--	--	< 0.2	--	--	--	--	--	2.7	< 0.694	--	--
Fluorene		--	--	--	--	0.6	--	--	< 0.63	--	--	--	--	--	--	< 0.5	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	0.2	< 0.694	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	0.7	--	--	< 0.63	--	--	--	--	--	--	1.1	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	0.4	< 0.694	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	< 0.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	< 0.5	--	--	< 0.63	--	--	--	--	--	--	< 0.5	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	< 0.2	< 0.694	--	--
Naphthalene		--	--	--	--	0.5	--	--	2.1	--	--	--	--	--	--	0.6	--	--	--	--	< 0.7	--	--	< 0.2	--	--	--	--	--	< 0.2	< 0.694	--	--
Phenanthrene		--	--	--	--	5.7	--	--	0.77	--	--	--	--	--	--	3.4	--	--	--	--	1.8	--	--	< 0.2	--	--	--	--	--	1.7	< 0.694	--	--
Pyrene		--	--	--	--	5.9	--	--	< 0.63	--	--	--	--	--	--	3.7	--	--	--	--	2.8	--	--	< 0.2	--	--	--	--	--	2.4	< 0.694	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	< 140	2000	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	< 140	< 670	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	< 140	< 670	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	< 100	--	--	--	--	--	--	--	--	--	--	< 140	< 670	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	ND	2000	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	<0.14	--	--	< 0.1	3.9	< 0.0346	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	<0.14	--	--	< 0.1	< 0.1	< 0.0346	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	<0.14	--	--	< 0.1	< 0.1	< 0.0346	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	<0.14	--	--	< 0.1	< 0.1	0.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	<0.14	--	--	< 0.1	3.9	0.33	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	53.9	< 2.1	--	--
Arsenic		1230	32.8	1050	1490	15	570	712	40	457	166	--	180	33	31	630	--	1950	1040	3170	185	7660	246	54.8	380	290	6800	474	51.9	98.3	3.4	661	9.9
Barium		--	--	--	--	170	650	--	92	--	--	--	390	53	140	150	--	--	--	--	--	--	--	17.5	6.8	120	--	--	--	253	34	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.43	0.25	--	--
Cadmium		--	--	--	--	< 0.32	2.1	--	< 5.0	--	--	--	18	< 0.40	< 0.28	< 0.29	--	--	--	--	--	--	--	0.12	2.9	< 0.53	--	--	--	< 0.57	< 0.41	--	--
Chromium		--	--	--	--	7.1	4.2	--	6.1	--	--	--	13	3.4	6.8	7.1	--	--	--	--	--	--	--	17.1	11	6.3	--	--	--	29.9	19	--	--
Copper		--	--	--	--	--	--	--	--	--	--	294	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		1610	76	1730	169	470	17000	24700	2000	--	9.8	--	5500	900	210	1700	--	--	--	--	3770	2790	20.2	4.48	110	11000	797	29.3	79.3	10600	17	--	126
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		W-4	W-6	TP301	TP302	C-18	C-22	C-22	TP-6	CES-2-1	CES-2-2	B217	CES-2	CES-4	C-8	C-21	C-21	CES-2-1	CES-2-2	CES-2-3	BOR-103	MW301D	MW302D	BOR-106	CES-2	CES-3	MW301D	MW302D	BOR-101	BOR-107	RIZ-102	BOR-109-1	C-2-1
Sample Depth (ft bgs):		5-10	5-10	5-10	5-10	6	6	6	6-8	6-8	6-8	6 - 9	7-9	7-9	8	8	8	8-10	8-12	8-12	9	9-9.5	9-9.5	9-10	9-11	9-11	9.5-11	9.5-11	10	10	10-12	10-12	10-15
Sample Date:		3/18/13	3/18/13	4/19/13	4/19/13	5/31/07	5/31/07	5/31/07	5/2/01	3/15/13	3/15/13	12/17/12	12/17/96	12/18/96	5/31/07	5/31/07	5/31/07	3/15/13	3/15/13	3/20/13	1/13/06	6/7/13	6/10/13	1/13/06	12/17/96	12/17/96	6/7/13	6/10/13	1/13/06	1/4/06	12/5/05	3/20/13	3/14/13
Analyte	Units																																
Mercury		--	--	--	--	8.47	8.41	--	12	--	--	--	1.3	< 0.25	0.23	64.8	--	--	--	--	--	--	--	< 0.010	1.2	13	--	--	--	45.6	< 0.08	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	99.9	15	--	--
Selenium		--	--	--	--	41	110	--	840	--	--	--	42	< 5.0	27	80	--	--	--	--	--	--	--	< 7.03	< 7.2	100	--	--	--	91.3	< 2.1	--	--
Silver		--	--	--	--	< 1.3	18	--	< 5.0	--	--	--	< 0.4	< 0.40	< 1.1	2.4	--	--	--	--	--	--	--	< 0.71	< 0.58	1.1	--	--	--	< 0.57	< 0.41	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 3.37	< 2.1	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	866	37	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	145	500	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		--	--	--	--	<0.5	--	--	<0.63	--	--	--	--	--	--	<0.5	--	--	--	--	1	--	--	<0.2	--	--	--	--	--	0.2	<0.694	--	--
Acenaphthylene		--	--	--	--	<0.5	--	--	<0.63	--	--	--	--	--	--	<0.5	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	<0.2	<0.694	--	--
Anthracene		--	--	--	--	<0.5	--	--	<0.63	--	--	--	--	--	--	0.6	--	--	--	--	1.8	--	--	<0.2	--	--	--	--	--	0.4	<0.694	--	--
Benzo(a)anthracene		--	--	--	--	2.1	--	--	<0.63	--	--	--	--	--	--	2.1	--	--	--	--	1.8	--	--	<0.2	--	--	--	--	--	1.1	<0.694	--	--
Benzo(a)pyrene		--	--	--	--	0.8	--	--	<0.63	--	--	--	--	--	--	1.2	--	--	--	--	1.1	--	--	<0.2	--	--	--	--	--	0.9	<0.694	--	--
Benzo(b)fluoranthene		--	--	--	--	3.3	--	--	<0.63	--	--	--	--	--	--	2.8	--	--	--	--	1.3	--	--	<0.2	--	--	--	--	--	1	<0.694	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	<0.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	0.7	--	--	<0.63	--	--	--	--	--	--	0.9	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	0.6	<0.694	--	--
Benzo(k)fluoranthene		--	--	--	--	2.2	--	--	<0.63	--	--	--	--	--	--	3	--	--	--	--	1.5	--	--	<0.2	--	--	--	--	--	1.1	<0.694	--	--
Chrysene		--	--	--	--	3.5	--	--	<0.63	--	--	--	--	--	--	2.6	--	--	--	--	1.8	--	--	<0.2	--	--	--	--	--	1.4	<0.694	--	--
Dibenzo(a,h)anthracene		--	--	--	--	0.7	--	--	<0.63	--	--	--	--	--	--	1.1	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	0.1	<0.694	--	--
Fluoranthene		--	--	--	--	<0.5	--	--	<0.63	--	--	--	--	--	--	4.4	--	--	--	--	3.2	--	--	<0.2	--	--	--	--	--	2.7	<0.694	--	--
Fluorene		--	--	--	--	0.6	--	--	<0.63	--	--	--	--	--	--	<0.5	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	0.2	<0.694	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	0.7	--	--	<0.63	--	--	--	--	--	--	1.1	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	0.4	<0.694	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	<0.63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	<0.5	--	--	<0.63	--	--	--	--	--	--	<0.5	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	<0.2	<0.694	--	--
Naphthalene		--	--	--	--	0.5	--	--	2.1	--	--	--	--	--	--	0.6	--	--	--	--	<0.7	--	--	<0.2	--	--	--	--	--	<0.2	<0.694	--	--
Phenanthrene		--	--	--	--	5.7	--	--	0.77	--	--	--	--	--	--	3.4	--	--	--	--	1.8	--	--	<0.2	--	--	--	--	--	1.7	<0.694	--	--
Pyrene		--	--	--	--	5.9	--	--	<0.63	--	--	--	--	--	--	3.7	--	--	--	--	2.8	--	--	<0.2	--	--	--	--	--	2.4	<0.694	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		CES-2-1	SHORE-2	SHORE-3	SHORE-5	SHORE-6	SHORE-8	W-3	W-4	W-5	W-6	TP301	TP302	CES-5	MW301D	MW302D	BOR-103	BOR-105	BOR-109-2	BOR-109-2	CES-2-2	CES-2-3	BOR-109-1	SHORE-9	MW301D	SHORE-8	MW302D	MW301D	BOR-109	BOR-109-2	CES-2-3	SHORE-1	SHORE-4
Sample Depth (ft bgs):		10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	11-13	11-13	11-13	12	12-13	12-14	12-14	12-14	12-14	12-15	12.5-15	13-13.5	13-15	13-15	13.5-15	14-15	14-15	14-15	14-15	14-15
Sample Date:		3/15/13	3/15/13	3/15/13	3/15/13	3/15/13	3/14/13	3/15/13	3/18/13	3/15/13	3/18/13	4/19/13	4/19/13	12/18/96	6/7/13	6/10/13	1/13/06	1/13/06	3/20/13	3/20/13	3/15/13	3/20/13	3/20/13	3/14/13	6/7/13	3/14/13	6/10/13	6/7/13	1/4/06	3/20/13	3/20/13	3/14/13	3/14/13
Analyte	Units																																
Volatile Organic Compounds (VOCs)	mg/kg																																
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																																
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																																
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 49.5	--	--	--	--	--	--	--	--	--	--	< 51.2	--	--	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 49.5	--	--	--	--	--	--	--	--	--	--	< 51.2	--	--	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	111	--	--	--	--	--	--	--	--	--	--	< 51.2	--	--	--	--
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.7	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.1	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.2	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.3	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.7	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.3	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.5	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1.4	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2.8	--	--	--	--	--	--	--	--	--	--	< 0.2	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																																
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	< 140	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	< 140	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	< 140	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	< 140	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																																
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																																
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																																
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																																
Antimony		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	15.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic		669	55.4	57.8	535	367	282	679	539	319	1380	124	1010	18	800	335	56.7	< 8.25	158	191	1250	9470	330	4.5	312	659	33.6	96.5	124	136	726	184	25.9
Barium		--	--	--	--	--	--	--	--	--	--	--	--	16	--	--	202	41	--	--	--	--	--	--	--	--	--	--	131	--	--	--	--
Beryllium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	--	--	--	--	--	--	--	< 0.58	--	--	0.14	0.27	--	--	--	--	--	--	--	--	--	--	< 0.86	--	--	--	--
Chromium		--	--	--	--	--	--	--	--	--	--	--	--	17	--	--	11.1	37.6	--	--	--	--	--	--	--	--	--	--	1.43	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		--	--	--	--	--	--	8020	2190	888	1440	13.6	1150	41	178	38.4	598	119	--	--	--	--	--	--	204	38	39.2	56.3	135	--	--	--	21.4
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		CES-2-1	SHORE-2	SHORE-3	SHORE-5	SHORE-6	SHORE-8	W-3	W-4	W-5	W-6	TP301	TP302	CES-5	MW301D	MW302D	BOR-103	BOR-105	BOR-109-2	BOR-109-2	CES-2-2	CES-2-3	BOR-109-1	SHORE-9	MW301D	SHORE-8	MW302D	MW301D	BOR-109	BOR-109-2	CES-2-3	SHORE-1	SHORE-4
Sample Depth (ft bgs):		10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	10-15	11-13	11-13	11-13	12	12-13	12-14	12-14	12-14	12-14	12-15	12.5-15	13-13.5	13-15	13-15	13.5-15	14-15	14-15	14-15	14-15	14-15
Sample Date:		3/15/13	3/15/13	3/15/13	3/15/13	3/15/13	3/14/13	3/15/13	3/18/13	3/15/13	3/18/13	4/19/13	4/19/13	12/18/96	6/7/13	6/10/13	1/13/06	1/13/06	3/20/13	3/20/13	3/15/13	3/20/13	3/20/13	3/14/13	6/7/13	3/14/13	6/10/13	6/7/13	1/4/06	3/20/13	3/20/13	3/14/13	3/14/13
Analyte	Units																																
Mercury		--	--	--	--	--	--	--	--	--	--	--	--	< 0.36	--	--	0.619	0.456	--	--	--	--	--	--	--	--	--	--	30.9	--	--	--	--
Nickel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	13.4	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	--	--	--	--	--	--	--	< 7.2	--	--	< 8.89	< 8.25	--	--	--	--	--	--	--	--	--	--	25.3	--	--	--	--
Silver		--	--	--	--	--	--	--	--	--	--	--	--	< 0.58	--	--	4.05	< 0.83	--	--	--	--	--	--	--	--	--	--	2.36	--	--	--	--
Thallium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 4.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	19.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	67.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																																	
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																																
Acenaphthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	<0.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	<0.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	0.7	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1.1	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1.3	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	0.5	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Chrysene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1.3	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	<0.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	2.7	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Fluorene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	0.3	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	0.5	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	<0.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	<0.2	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	1.4	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--
Pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<0.3	2.8	--	--	--	--	--	--	--	--	--	--	<0.2	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

DRAFT

Sample Location:		SHORE-7	BOR-109-3	BOR-109-1	MW301D	MW302D	BOR-105	BOR-109-3	BOR-106	MW301D	MW302D	MW301D	BOR-109	MW301D	MW302D	MW302D	MW301D	MW302D	MW301D	MW302D	MW301D	MW301D
Sample Depth (ft bgs):		14-15	14-16	15-16	15-17	15-17	16	16-18	17-19	17-19	17-19	19-21	20	21-23	21-23	23-25	25-27	25-27	27-29	27-29	29-31	31-33
Sample Date:		3/14/13	3/15/13	3/20/13	6/7/13	6/10/13	1/13/06	3/15/13	1/13/06	6/7/13	6/10/13	6/7/13	1/4/06	6/7/13	6/10/13	6/10/13	6/7/13	6/10/13	6/7/13	6/10/13	6/7/13	6/7/13
Analyte	Units																					
Volatile Organic Compounds (VOCs)	mg/kg																					
Acetone		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Butanone, 2- (MEK)		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Isopropyltoluene, p-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylene Chloride		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Styrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethylene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,2,4-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trimethylbenzene, 1,3,5-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylene, Total		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons (VPH)	mg/kg																					
C_5-C_8 Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organic Compounds (SVOCs)	mg/kg																					
Acenaphthene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bis (2-ethylhexyl) phthalate		--	--	--	--	--	< 0.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran		--	--	--	--	--	< 0.52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	< 0.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons (EPH)	mg/kg																					
C_9-C_{18} Aliphatics		--	--	--	--	--	--	--	< 49.5	--	--	--	< 38.2	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics		--	--	--	--	--	--	--	< 49.5	--	--	--	< 38.2	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics		--	--	--	--	--	--	--	< 49.5	--	--	--	< 38.2	--	--	--	--	--	--	--	--	--
Acenaphthene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	--	--	< 0.2	--	--	--	0.3	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	--	--	< 0.2	--	--	--	0.1	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	--	--	< 0.2	--	--	--	< 0.2	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons (TPH)	mg/kg																					
Fuels, diesel, no 2		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel oil no 6		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gasoline		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Kerosene/Jet Fuel		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Unknown Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Polychlorinated Biphenyls (PCBs)	mg/kg																					
Aroclor 1248		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1254		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1260		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aroclor 1262		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total PCBs		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides	mg/kg																					
Total Pesticides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides	mg/kg																					
Total Herbicides		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Metals, Total	mg/kg																					
Antimony		--	--	--	--	--	50.8	--	--	--	--	--	26.8	--	--	--	--	--	--	--	--	--
Arsenic		694	34	109	74.6	4.2	1200	50.3	93.8	68.7	3.7	8.3	417	4.4	4.7	7.1	3.4	6.8	6.5	6.0	4.2	3.5
Barium		--	--	--	--	--	345	--	--	--	--	--	367	--	--	--	--	--	--	--	--	--
Beryllium		--	--	--	--	--	0.29	--	--	--	--	--	< 0.32	--	--	--	--	--	--	--	--	--
Cadmium		--	--	--	--	--	3.89	--	--	--	--	--	6.94	--	--	--	--	--	--	--	--	--
Chromium		--	--	--	--	--	25	--	--	--	--	--	4.46	--	--	--	--	--	--	--	--	--
Copper		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Iron		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead		79.6	--	--	3.6	3.1	1750	--	3.66	10.9	2.6	4.6	1730	2.8	6.2	8.9	3.1	7.3	4.9	6.0	3.4	2.8
Manganese		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

TABLE H-2
PHASE II SOIL ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample Location:		SHORE-7	BOR-109-3	BOR-109-1	MW301D	MW302D	BOR-105	BOR-109-3	BOR-106	MW301D	MW302D	MW301D	BOR-109	MW301D	MW302D	MW302D	MW301D	MW302D	MW301D	MW302D	MW301D	MW301D
Sample Depth (ft bgs):		14-15	14-16	15-16	15-17	15-17	16	16-18	17-19	17-19	17-19	19-21	20	21-23	21-23	23-25	25-27	25-27	27-29	27-29	29-31	31-33
Sample Date:		3/14/13	3/15/13	3/20/13	6/7/13	6/10/13	1/13/06	3/15/13	1/13/06	6/7/13	6/10/13	6/7/13	1/4/06	6/7/13	6/10/13	6/10/13	6/7/13	6/10/13	6/7/13	6/10/13	6/7/13	6/7/13
Analyte	**Units**																					
Mercury		--	--	--	--	--	2.27	--	--	--	--	--	0.327	--	--	--	--	--	--	--	--	--
Nickel		--	--	--	--	--	19.8	--	--	--	--	--	26.5	--	--	--	--	--	--	--	--	--
Selenium		--	--	--	--	--	< 7.70	--	--	--	--	--	< 6.37	--	--	--	--	--	--	--	--	--
Silver		--	--	--	--	--	7.85	--	--	--	--	--	79.5	--	--	--	--	--	--	--	--	--
Thallium		--	--	--	--	--	< 3.85	--	--	--	--	--	8.53	--	--	--	--	--	--	--	--	--
Vanadium		--	--	--	--	--	67.6	--	--	--	--	--	8.39	--	--	--	--	--	--	--	--	--
Zinc		--	--	--	--	--	367	--	--	--	--	--	1740	--	--	--	--	--	--	--	--	--
Other																						
Cyanide, total	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, reactive	mg/kg	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ	mg/kg																					
Acenaphthene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Acenaphthylene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Anthracene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Benzo(e)pyrene		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Chrysene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Fluoranthene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Fluorene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 1-		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methylnaphthalene, 2-		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--
Naphthalene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	0.3	--	--	--	--	--	--	--	--	--
Phenanthrene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	0.1	--	--	--	--	--	--	--	--	--
Pyrene		--	--	--	--	--	<0.26	--	<0.2	--	--	--	<0.2	--	--	--	--	--	--	--	--	--

DRAFT

General Notes:

1. In general, analytes detected in at least one sample
2. "<" = The analyte was not detected at a concentration above the specified laboratory reporting limit (RL).
3. The following results in this table were included in deriving soil EPCs and the rationales are summarized below.

🟩 Low pH Area	soil in the top 4 feet will be excavated during RAM work; therefore, the green-highlight results that are associated with top 4 feet of soil were included in the data set to derive soil EPCs.
🟥 High Arsenic Area	soil in the top 6 feet will be excavated during RAM work; therefore, the red-highlight results that are associated with top 6 feet of soil were included in the data set to derive soil EPCs.
	soil associated with non-highlighted results were assumed to be accessible by construction workers during the RAM work.

4. The following results in this table were not quantitatively used in this risk characterization and the rationales are summarized below.

🟨 A-S Area	associated soil in this area will be removed prioer to RAM work; the results were not used to derive soil EPCs.
🟩 Low pH Area	the green-highlight results that are associated with soil beyond 4 feet bgs were not included in the data set to derive soil EPCs.
🟥 High Arsenic Area	the red-highlight results that are associated with soil beyond 6 feet bgs were not included in the data set to derive soil EPCs.
A-5 (6' and 8')	associated soil will be removed before the RAM work starts; the results were not used to derive soil EPCs.

3. MCP = 310 CMR 40.0000 Massachusetts Contingency Plan with revisions effective June 26, 2009.
6. "--" = Not analyzed for the compound/parameter.
6. NS = No MCP standard has been established for this analyte.
8. mg/kg = milligrams per kilogram

Δ These analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result.
If the analyte was not detected via any analytical method, the minimum RL is listed as the RL for the non-detected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

File No. 171521.15
Page 1 of 1
2/4/2016

TABLE H-3
SUMMARY OF ANALYTICAL DATA FOR PHASE III SOIL SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Constitute [1]	Representative Phase III Soil[2]						Background[5]
	Frequency of Detection[3]	Range Detected[3]	Median Concentration[4]	Arithmetic Mean Concentration[4]	Maximum Detected Concentration		
					Location	Depth (feet)	
Volatile Organic Compounds (VOCs)							
Acetone	2 / 41	0.0080 - 0.067	0.32	0.68	CES-TP-2	5-8	NA
Benzene	3 / 41	0.0020 - 2.0	0.032	0.097	RIZ-4	10-12	NA
Butanone, 2- (MEK)	1 / 41	0.0100 - 0.0100	0.32	0.57	CES-TP-2	5-8	NA
Carbon disulfide	2 / 41	0.0020 - 0.014	0.32	0.52	CES-TP-2	5-8	NA
Chloroform	1 / 41	0.14 - 0.14	0.050	0.085	TP-10	5-7	NA
Ethylbenzene	5 / 41	0.0020 - 15	0.036	0.42	RIZ-4	10-12	NA
Isopropyltoluene, p-	1 / 39	4.5 - 4.5	0.16	0.36	RIZ-4	5-7	NA
Methylene Chloride	2 / 41	0.0100 - 0.029	0.16	0.29	CES-TP-2	5-8	NA
Toluene	4 / 41	0.0020 - 11	0.048	0.33	RIZ-4	10-12	NA
Trichloroethylene	1 / 41	0.45 - 0.45	0.034	0.064	TP-10	5-7	NA
Trimethylbenzene, 1,2,4-	3 / 39	0.32 - 30	0.17	0.99	RIZ-4	10-12	NA
Trimethylbenzene, 1,3,5-	1 / 39	11 - 11	0.16	0.47	RIZ-4	10-12	NA
Xylene, Total	4 / 41	0.075 - 36	0.036	0.95	RIZ-4	10-12	NA
Volatile Petroleum Hydrocarbons (VPH)							
C5-C8 Aliphatics	2 / 57	17 - 515	1.7	11	RIZ-4	10-12	NA
C9-C12 Aliphatics	2 / 57	90 - 2260	1.7	43	RIZ-4	10-12	NA
C9-C10 Aromatics	2 / 57	29 - 1340	1.7	26	RIZ-4	10-12	NA
Semi-Volatile Organic Compounds (SVOCs)							
Bis (2-ethylhexyl) phthalate	1 / 18	0.62 - 0.62	0.20	0.38	CES-3-B	3-8	NA
Dibenzofuran	1 / 16	1.1 - 1.1	0.20	0.33	BOR-7-C	4-8	NA
Extractable Petroleum Hydrocarbons (EPH)							
C9-C18 Aliphatics	22 / 136	12 - 3040	7.8	68	RIZ-4	10-12	NA
C19-C36 Aliphatics	95 / 136	9.8 - 27500	54	665	S-39	0-0.5	NA
C11-C22 Aromatics	96 / 136	11 - 19200	54	454	RIZ-4	10-12	NA
Total Petroleum Hydrocarbons (TPH)							
Fuels, diesel, no 2	1 / 10	2000 - 2000	65	270	CES-3	9-11	NA
Unknown Hydrocarbons	3 / 3	150 - 890	210	417	CES-6	9-13	NA
Total Petroleum Hydrocarbons	5 / 11	17 - 2000	210	628	CES-3	9-11	NA
Polychlorinated Biphenyls (PCBs)							
Aroclor 1254	3 / 8	0.26 - 0.34	0.055	0.15	B215	5 - 7	NA
Aroclor 1260	1 / 8	0.20 - 0.20	0.053	0.071	B215	5 - 7	NA
Metals, Total							
Antimony	14 / 50	2.2 - 54	1.2	5.0	BOR-107	10	1
Arsenic	280 / 289	2.3 - 2950	18	114	A-5-1	6-8	20
Barium	125 / 126	7.2 - 1900	42	88	A-3	6	50
Beryllium	28 / 50	0.22 - 0.94	0.23	0.24	S-23	0-0.5	0.4
Cadmium	38 / 127	0.090 - 32	0.27	1.4	A-2	4	2
Chromium	126 / 127	0.96 - 84	18	22	S-43	0-0.5	30
Copper	4 / 4	30 - 1010	202	361	B218	6 - 8	40
Iron	2 / 2	36400 - 81800	59100	59100	A-3	6	20000
Lead	255 / 257	3.7 - 20000	195	1235	BOR-4	5-7	100
* Manganese	2 / 2	37 - 49	43	43	A-3	6	300
Mercury	62 / 127	0.090 - 61	0.17	2.6	TP-4	6-8	0.3
Nickel	50 / 50	3.1 - 100	17	23	BOR-107	10	20
Selenium	26 / 126	3.3 - 840	2.3	18	TP-6	6-8	0.5
Silver	33 / 126	0.51 - 80	0.28	2.1	BOR-109	20	0.6
Thallium	1 / 50	8.5 - 8.5	1.2	3.1	BOR-109	20	0.6
Vanadium	50 / 50	7.7 - 866	31	48	BOR-107	10	30
Zinc	50 / 50	26 - 2100	140	249	S-6	0-0.5	100
Other							
Cyanide, total	2 / 4	0.23 - 1.3	0.15	0.42	B/MW-202	3 - 5	NA
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ							
Acenaphthene	14 / 137	0.20 - 56	0.33	2.4	BOR-110	2-3	0.5
Acenaphthylene	8 / 137	0.20 - 11	0.28	1.1	BOR-111	6-7	0.5
Anthracene	22 / 137	0.22 - 87	0.36	3.6	BOR-110	2-3	1
Benzo(a)anthracene	44 / 137	0.100 - 98	0.39	4.2	BOR-111	6-7	2
Benzo(a)pyrene	43 / 137	0.20 - 54	0.39	3.1	BOR-110	2-3	2
Benzo(b)fluoranthene	44 / 137	0.100 - 49	0.39	3.0	BOR-111	6-7	2
Benzo(e)pyrene	12 / 45	1.2 - 27	1.3	2.8	BOR-6	5-7	NA
Benzo(ghi)perylene	25 / 137	0.26 - 27	0.36	1.9	BOR-111	6-7	1
Benzo(k)fluoranthene	37 / 137	0.100 - 64	0.38	3.0	BOR-111	6-7	1
Chrysene	48 / 137	0.100 - 104	0.42	4.4	BOR-111	6-7	2
Dibenzo(a,h)anthracene	15 / 137	0.100 - 9.4	0.32	1.2	BOR-111	6-7	0.5
Fluoranthene	55 / 137	0.20 - 264	0.55	9.5	BOR-111	6-7	4
Fluorene	17 / 137	0.20 - 61	0.34	2.5	BOR-110	2-3	1
Indeno(1,2,3-cd)pyrene	28 / 137	0.29 - 31	0.36	2.1	BOR-111	6-7	1
Methylnaphthalene, 1-	2 / 45	1.4 - 68	0.55	2.6	RIZ-4	10-12	NA
Methylnaphthalene, 2-	10 / 137	0.20 - 71	0.29	1.6	RIZ-4	10-12	0.5
Naphthalene	27 / 138	0.20 - 47	0.21	1.6	RIZ-4	10-12	0.5
Phenanthrene	51 / 137	0.100 - 363	0.42	12	BOR-111	6-7	3
Pyrene	55 / 137	0.27 - 229	0.52	9.0	BOR-111	6-7	4

Notes:
# Only analytes detected in one or more representative Phase III soil samples are listed in this table.
# The following results in the Phase III Soil Analytical Results table are included in the statistics in this table and the rationales are summarized below.

🟩 Low pH Area	soil in the top 4 feet will be excavated during RAM work; therefore, the green-highlight results that are associated with top 4 feet of soil were included in the data set to derive soil EPCs.
🟥 High Arsenic Area	soil in the top 6 feet will be excavated during RAM work; therefore, the red-highlight results that are associated with top 6 feet of soil were included in the data set to derive soil EPCs.
	soil associated with non-highlighted results were assumed to be accessible by construction workers during the RAM work.

3. These statistics only include analytical results for constituents detected above the laboratory reporting limit (RL).
# These statistics include all detected constituent concentrations and one-half the RL for constituents not detected above the RL.
# Background concentration from MassDEP, 2002. Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. May. Values for "Natural" soil were used.
* indicates the maximum detected concentration is below the MassDEP-identified background concentration.
# Concentrations reported in milligrams per kilogram (mg/kg).
Δ These analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the samp
If the analyte was not detected via any analytical method, the minimum RL is listed as the RL for the non-detected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.
NA = Not Available.

J:\170,000-179,999\171521\171521-15.DEL\Construction RAM Plan\Appendix H - Focused RA\Everett Ph III Soil Data Highlight_rev\Soil Summary

QA: CL Date: 2/4/16

TABLE H-4
SUMMARY OF ANALYTICAL DATA FOR PRECHARACTERIZATION SOIL SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Constitute [1]	Representative Precharacterization Soil [2]						Background [5]
	Frequency of Detection [3]	Range Detected [3]	Median Concentration [4]	Arithmetic Mean Concentration [4]	Maximum Detected Concentration Location	Maximum Detected Concentration Depth (feet)	
RCRA 8 Metals							
Arsenic	973 / 1254	2.6 - 2260	13	39	E02	10 - 12	20
Barium	1222 / 1254	3.4 - 1060	50	73	E20	12 - 18	50
Cadmium	231 / 1254	0.42 - 249	0.79	1.9	H15	10 - 12	2
Chromium	1214 / 1254	0.69 - 205	22	28	C16	3.3 - 6.6	30
Lead	913 / 1254	5.5 - 34500	46	679	C21	9 - 13	100
Selenium	106 / 1252	2.7 - 1880	4.2	8.9	L18	3.3 - 6.6	0.5
Silver	235 / 1254	0.43 - 34	0.79	1.6	H13	6.6 - 10	0.6
Mercury	682 / 1254	0.028 - 877	0.068	2.7	L18	3.3 - 6.6	0.3
Herbicides							
2,4,5-T	1 / 739	0.060 - 0.060	0.030	0.058	B16	0 - 3.3	NA
2,4-D	3 / 739	0.15 - 0.40	0.033	0.14	815	0 - 4	NA
Dicamba	1 / 739	0.15 - 0.15	0.032	0.068	B15	0 - 4	NA
Pesticides							
4,4'-DDD	4 / 739	0.011 - 0.018	0.0019	0.0045	Stockpile 3	NA	NA
4,4'-DDE	8 / 739	0.018 - 0.15	0.0019	0.0052	M11	3.3 - 6.6	NA
4,4'-DDT	12 / 739	0.0070 - 7.6	0.0019	0.016	M11	0 - 3.3	NA
alpha-BHC	2 / 739	0.0033 - 0.011	0.0019	0.0045	L14	14 - 16	NA
beta-BHC	2 / 739	0.0044 - 0.0089	0.0019	0.0045	C18	6.6 - 10	NA
Dieldrin	3 / 739	0.37 - 5.4	0.0019	0.013	M11	0 - 3.3	NA
Endrin ketone	1 / 739	0.100 - 0.100	0.0019	0.0046	J11	3.3 - 6.6	NA
gamma-BHC (Lindane)	1 / 739	0.0076 - 0.0076	0.0019	0.0045	L18	18 - 26	NA
Heptachlor epoxide	4 / 739	0.013 - 1.3	0.0019	0.0065	M11	0 - 3.3	NA
Hexachlorobenzene	19 / 739	0.0023 - 0.058	0.0020	0.0047	D13	3.3 - 6.6	NA
Methoxychlor	3 / 739	0.042 - 0.97	0.0019	0.0064	M11	0 - 3.3	NA
Polychlorinated Biphenyls							
Aroclor 1242	7 / 1254	0.16 - 59	0.076	0.24	D02	3.3 - 6.6	NA
Aroclor 1248	15 / 1254	0.14 - 17	0.076	0.23	E02	3.3 - 6	NA
Aroclor 1254	133 / 1254	0.13 - 156	0.078	0.57	C20	3.3 - 6.6	NA
Aroclor 1260	89 / 1254	0.14 - 2890	0.077	3.3	E11	11 - 13	NA
Aroclor 1262	27 / 1254	0.18 - 5.7	0.076	0.22	B17	3.3 - 6.6	NA
Aroclor 1268	13 / 1254	0.18 - 13	0.076	0.21	I09	3.3 - 6.6	NA
Total Petroleum Hydrocarbons	709 / 1254	24 - 104000	65	590	H09	6.6 - 10	NA
Semi-Volatile Organic Compounds							
2,4-Dimethylphenol	3 / 1254	1.5 - 4.9	0.50	0.67	A01	3 - 6	NA
2-Methylnaphthalene	40 / 1254	0.88 - 75	0.51	0.89	A01	3 - 6	0.5
2-Methylphenol	1 / 1254	2.4 - 2.4	0.50	0.66	A01	3 - 6	NA
3,3´-Dichlorobenzidine	1 / 1254	2.8 - 2.8	1.0	1.3	E04	0 - 3.3	NA
3+4-Methylphenol	10 / 1254	2.9 - 77	1.0	1.5	K15	19 - 21	NA
Acenaphthene	63 / 1254	0.92 - 75	0.51	1.1	A01	3 - 6	0.5
Acenaphthylene	23 / 1254	0.99 - 29	0.50	0.74	C01	6.6 - 6.9	0.5
Anthracene	119 / 1254	0.98 - 168	0.51	1.7	A01	3 - 6	1
Benzo(a)anthracene	232 / 1254	0.96 - 157	0.53	2.4	A01	3 - 6	2
Benzo(a)pyrene	303 / 12S4	0.42 - 122	0.27	1.7	F11	10 - 13.3	2
Benzo(b)fluoranthene	256 / 1254	0.86 - 142	0.53	2.2	F11	10 - 13.3	2
Benzo(g,h,i)perylene	112 / 1254	0.88 - 55	0.51	0.97	A01	3 - 6	1
Benzo(k)fluoranthene	142 / 1254	0.78 - 91	0.52	1.4	C05	0 - 3.3	1
bis(2-Chloroethoxy)methane	1 / 1254	15 - 15	0.50	0.67	K16	14 - 16	NA
bis(2-Ethylhexyl)phthalate	107 / 1254	0.89 - 799000	0.51	727	H09	6.6 - 10	NA
Butylbenzylphthalate	7 / 1254	1.4 - 17	0.50	0.68	H18	3.3 - 6.6	NA
Chrysene	346 / 1254	0.44 - 130	0.27	1.9	F11	10 - 13.3	2
Dibenzo(a,h)Anthracene	96 / 1254	0.45 - 16	0.26	0.47	C05	0 - 3.3	0.5
Dibenzofuran	61 / 1254	0.92 - 85	0.51	1.0	A01	3 - 6	NA
Di-n-butylphthalate	2 / 1254	1.3 - 3.3	0.50	0.66	H18	3.3 - 6.6	NA
Fluoranthene	339 / 1254	0.92 - 445	0.54	5.0	A01	3 - 6	4
Fluorene	75 / 1254	0.94 - 84	0.51	1.2	A01	3 - 6	1
Indeno(1,2,3-cd)Pyrene	110 / 1254	0.90 - 55	0.51	0.99	A01	3 - 6	1
Pentachlorophenol	1 / 1254	17 - 17	2.5	2.7	M10	14 - 16	NA
Phenanthrene	287 / 12S4	0.81 - 612	0.53	4.6	A01	3 - 6	3
Phenol	13 / 1254	2.2 - 214	0.50	0.99	K14	19 - 21	NA
Pyrene	302 / 1254	0.86 - 347	0.53	3.7	A01	3 - 6	4
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ							
1,1,1-Trichloroethane	4 / 1251	0.0056 - 0.36	0.0023	0.0036	D16	12 - 18	NA
1,1-Dichloroethane	9 / 1251	0.0054 - 0.18	0.0023	0.0036	E11	6.66 - 10	NA
1,2,3-Trichlorobenzene	4 / 1251	0.0069 - 33	0.0023	0.031	E11	11 - 13	NA
1,2,3-Trichloropropane	1 / 1251	0.023 - 0.023	0.0023	0.0032	A02	6 - 8	NA
1,2,4-Trichlorobenzene	7 / 1257	0.0054 - 258	0.0023	0.33	E11	11 - 13	NA
1,2,4-Trimethylbenzene	26 / 1251	0.0059 - 2.7	0.0023	0.0074	F13	14 - 16	NA
1,2-Dichlorobenzene	4 / 1257	0.0066 - 3.6	0.0023	0.0095	E11	11 - 13	NA
1,2-Dichloroethane	2 / 1251	0.030 - 10.0	0.0023	0.011	D01	0 - 6	NA
1,2-Dichloropropane	1 / 1251	0.18 - 0.18	0.0023	0.0033	D01	0 - 6	NA
1,3,5-Trimethylbenzene	15 / 1251	0.0061 - 0.78	0.0023	0.0044	F13	14 - 16	NA
1,3-Dichlorobenzene	2 / 1257	0.21 - 4.9	0.0023	0.0096	E11	11 - 13	NA
1,4-Dichlorobenzene	3 / 1257	0.0084 - 5.7	0.0023	0.011	E11	11 - 13	NA
1,4-Dioxane	2 / 1251	0.10 - 0.26	0.045	0.12	F04	12 - 14	NA
2-Butanone	86 / 1251	0.0058 - 1.9	0.0046	0.012	K11	14 - 18	NA
2-Chlorotoluene	1 / 1251	0.010 - 0.010	0.0023	0.0032	H18	19 - 21	NA
4-Isopropyltoluene	36 / 1251	0.0025 - 3.5	0.0023	0.0076	C22	19 - 21	NA
Acetone	667 / 1251	0.0069 - 6.0	0.012	0.070	K15	19 - 21	NA
Benzene	21 / 1251	0.0048 - 2.3	0.0023	0.0063	C01	3.3 - 6.6	NA
Carbon Disulfide	146 / 1251	0.0038 - 1.4	0.0024	0.0094	D17	14 - 16	NA
Chlorobenzene	1 / 1251	0.012 - 0.012	0.0023	0.0032	J16	3.3 - 6.6	NA
Chloroform	8 / 1251	0.0038 - 0.29	0.0023	0.0038	C01	3.3 - 6.6	NA
cis-1,2-Dichloroethene	7 / 1251	0.0053 - 0.78	0.0023	0.0042	E04	3.3 - 6.6	NA
Diethyl Ether	8 / 1251	0.0045 - 0.13	0.0023	0.0034	F04	6 - 8	NA
Di-isopropyl ether	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Ethyl tertiary-butyl ether	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Ethylbenzene	16 / 1251	0.0051 - 0.45	0.0023	0.0044	E20	18 - 25	NA
Hexachlorobutadiene	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Isopropylbenzene	7 / 1251	0.0053 - 0.11	0.0023	0.0035	D16	12 - 18	NA
Methyl tert-Butyl Ether	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Methylene Chloride	0 / 1251	0 - 0	ND	0.0077	ND	ND	NA
Naphthalene	155 / 1257	0.0041 - 355	0.0024	0.80	A01	3 - 6	0.5
n-Butylbenzene	9 / 1251	0.0043 - 0.84	0.0023	0.0052	F13	14 - 16	NA
n-Propylbenzene	7 / 1251	0.021 - 0.27	0.0023	0.0038	D09	16 - 18	NA
sec-Butylbenzene	9 / 1251	0.0048 - 1.8	0.0023	0.0056	D09	16 - 18	NA
Styrene	7 / 1251	0.0060 - 0.85	0.0023	0.0043	A01	3 - 6	NA
tert-Butylbenzene	2 / 1251	0.013 - 0.28	0.0023	0.0034	D09	16 - 18	NA
Tertiary-amyl methyl ether	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Tetrachloroethene	2 / 1251	0.010 - 0.018	0.0023	0.0032	L14	0 - 3.3	NA
Tetrahydrofuran	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Toluene	20 / 1251	0.00S2 - 1.3	0.0023	0.0053	E20	18 - 25	NA
trans-1,2-Dichloroethene	0 / 1251	0 - 0	ND	ND	ND	ND	NA
trans-1,3-Dichloropropene	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Trichloroethene	9 / 1251	0.0053 - 4.3	0.0023	0.0097	E04	3.3 - 6.6	NA
Trichlorofluoromethane	0 / 1251	0 - 0	ND	ND	ND	ND	NA
Vinyl Chloride	3 / 1251	0.012 - 0.065	0.0046	0.0059	F04	14 - 16	NA
Xylenes (Total)	16 / 1257	0.0090 - 2.0	0.0023	0.0080	E20	18 - 25	NA

Notes:

1. Only analytes detected in one or more representative precharacterization soil samples are listed in this table.
   Although not detected in any precharacterization soil samples, methylene chloride was detected in some other soil samples collected from the Site. As a result, methylene chloride is listed in the table.
2. All sample results in the Precharacterization Soil Analytical Results table but the gray-highlighted results are included in the statistics.
3. These statistics only include analytical results for constituents detected above the laboratory reporting limit (RL).
4. These statistics include all detected constituent concentrations and one-half the RL for constituents not detected above the RL.
   The arithmetic mean concentration of methylene chloride was calculated based on one-half the RLs for all the non-detected results.
5. Background concentration from MassDEP, 2002. Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. May.
   Values for "Natural" soil were used.
6. Concentrations reported in milligrams per kilogram (mg/kg).
7. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene.
   If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation.
   It should be noted that total xylene was reported for certain samples by the laboratory and the total xylene results derived using the above approach might be different from the results reported by the laboratory.

Δ These analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result.
If the analyte was not detected via any analytical method, the minimum RL is listed as the RL for the non-detected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

NA = Not Available; ND =Not Detected.

TABLE H-5
SUMMARY OF ANALYTICAL DATA FOR ALL REPRESENTATIVE SOIL SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Constitute [1]	All Representative Soil[2]					Background[6]	Exposure Point Concentration for Human Health Risk Characterization[4,7]
	Frequency of Detection[3]	Range Detected[3]	Arithmetic Mean Concentration[4]	Maximum Detected Concentration			
				Location	Depth (feet)		
Volatile Petroleum Hydrocarbons (VPH)							
C5-C8 Aliphatics	2 / 57	17 - 515	11	RIZ-4	10-12	NA	11
C9-C12 Aliphatics	2 / 57	90 - 2260	43	RIZ-4	10-12	NA	NCC
C9-C10 Aromatics	2 / 57	29 - 1340	26	RIZ-4	10-12	NA	26
Extractable Petroleum Hydrocarbons (EPH)							
C9-C18 Aliphatics	22 / 136	12 - 3040	68	RIZ-4	10-12	NA	68
C19-C36 Aliphatics	95 / 136	9.8 - 27500	665	5-39	0-0.5	NA	665
C11-C22 Aromatics	96 / 136	11 - 19200	454	RIZ-4	10-12	NA	454
Metals, Total							
Antimony	14 / 50	2.2 - 54	5.0	BOR-107	10	1	5.0
Arsenic	1253 / 1543	2.3 - 2950	53	A-5-1	6-8	20	53
Barium	1347 / 1380	3.4 - 1900	74	A-3	6	50	74
Beryllium	28 / 50	0.22 - 0.94	0.24	5-23	0-0.5	0.4	0.24
Cadmium	269 / 1381	0.090 - 249	1.8	H15	10 - 12	2	1.8
Chromium	1340 / 1381	0.69 - 205	27	C16	3.3 - 6.6	30	27
Copper	4 / 4	30 - 1010	361	B218	6 - 8	40	1010
Iron	2 / 2	36400 - 81800	59100	A-3	6	20000	81800
Lead	1168 / 1511	3.7 - 34500	773	C21	9 - 13	100	773
* Manganese	2 / 2	37 - 49	43	A-3	6	300	NCC
Nickel	50 / 50	3.1 - 100	23	BOR-107	10	20	23
Selenium	132 / 1378	2.7 - 1880	9.8	L18	3.3 - 6.6	0.5	9.8
Silver	268 / 1380	0.43 - 80	1.7	BOR-109	20	0.6	1.7
Mercury	744 / 1381	0.028 - 877	2.7	L18	3.3 - 6.6	0.3	2.7
Thallium	1 / 50	8.5 - 8.5	3.1	BOR-109	20	0.6	3.1
Vanadium	50 / 50	7.7 - 866	48	BOR-107	10	30	48
Zinc	50 / 50	26 - 2100	249	5-6	0-0.5	100	249
Other							
Cyanide, total	2 / 4	0.23 - 1.3	0.42	B/MW-202	3 - 5	NA	1.3
Herbicides							
2,4,5-T	1 / 739	0.060 - 0.060	0.058	B16	0 - 3.3	NA	0.058
2,4-D	3 / 739	0.15 - 0.40	0.14	B15	0 - 4	NA	0.14
Dicamba	1 / 739	0.15 - 0.15	0.068	B15	0 - 4	NA	0.068
Pesticides							
4,4'-DDD	4 / 739	0.011 - 0.018	0.0045	Stockpile 3	NA	NA	0.0045
4,4'-DDE	8 / 739	0.018 - 0.15	0.0052	M11	3.3 - 6.6	NA	0.0052
4,4'-DDT	12 / 739	0.0070 - 7.6	0.016	M11	0 - 3.3	NA	0.016
alpha-BHC	2 / 739	0.0033 - 0.011	0.0045	L14	14 - 16	NA	0.0045
beta-BHC	2 / 739	0.0044 - 0.0089	0.0045	C18	6.6 - 10	NA	0.0045
Dieldrin	3 / 739	0.37 - 5.4	0.013	M11	0 - 3.3	NA	0.013
Endrin ketone	1 / 739	0.100 - 0.100	0.0046	J11	3.3 - 6.6	NA	0.0046
gamma-BHC (Lindane)	1 / 739	0.0076 - 0.0076	0.0045	L18	18 - 26	NA	0.0045
Heptachlor epoxide	4 / 739	0.013 - 1.3	0.0065	M11	0 - 3.3	NA	0.0065
Hexachlorobenzene	19 / 739	0.0023 - 0.058	0.0047	D13	3.3 - 6.6	NA	0.0047
Methoxychlor	3 / 739	0.042 - 0.97	0.0064	M11	0 - 3.3	NA	0.0064
Polychlorinated Biphenyls							
Aroclor 1242	7 / 1254	0.16 - 59	0.24	D02	3.3 - 6.6	NA	0.24
Aroclor 1248	15 / 1254	0.14 - 17	0.23	E02	3.3 - 6	NA	0.23
Aroclor 1254	136 / 1262	0.13 - 156	0.57	C20	3.3 - 6.6	NA	0.57
Aroclor 1260	90 / 1262	0.14 - 2890	3.3	E11	11 - 13	NA	3.3
Aroclor 1262	27 / 1254	0.18 - 5.7	0.22	B17	3.3 - 6.6	NA	0.22
Aroclor 1268	13 / 1254	0.18 - 13	0.21	I09	3.3 - 6.6	NA	0.21
Total Petroleum Hydrocarbons	714 / 1265	17 - 104000	590	H09	6.6 - 10	NA	NCC
Semi-Volatile Organic Compounds							
2,4-Dimethylphenol	3 / 1254	1.5 - 4.9	0.67	A01	3 - 6	NA	0.67
Methylnaphthalene, 1-	2 / 45	1.4 - 68	2.6	RIZ-4	10-12	NA	2.6
2-Methylnaphthalene	50 / 1391	0.20 - 75	0.96	A01	3 - 6	0.5	0.96
2-Methylphenol	1 / 1254	2.4 - 2.4	0.66	A01	3 - 6	NA	0.66
3,3'-Dichlorobenzidine	1 / 1254	2.8 - 2.8	1.3	E04	0 - 3.3	NA	1.3
3+4-Methylphenol	10 / 1254	2.9 - 77	1.5	K15	19 - 21	NA	1.5
Acenaphthene	77 / 1391	0.20 - 75	1.2	A01	3 - 6	0.5	1.2
Acenaphthylene	31 / 1391	0.20 - 29	0.78	C01	6.6 - 6.9	0.5	0.78
Anthracene	141 / 1391	0.22 - 168	1.9	A01	3 - 6	1	1.9
Benzo(a)anthracene	276 / 1391	0.100 - 157	2.6	A01	3 - 6	2	2.6
Benzo(a)pyrene	346 / 1391	0.20 - 122	1.9	F11	10 - 13.3	2	1.9
Benzo(e)pyrene	12 / 45	1.2 - 27	2.8	BOR-6	5-7	NA	2.8
Benzo(b)fluoranthene	300 / 1391	0.100 - 142	2.3	F11	10 - 13.3	2	2.3
Benzo(g,h,i)perylene	137 / 1391	0.26 - 55	1.1	A01	3 - 6	1	1.1
Benzo(k)fluoranthene	179 / 1391	0.100 - 91	1.5	C05	0 - 3.3	1	1.5
bis(2-Chloroethoxy)methane	1 / 1254	15 - 15	0.67	K16	14 - 16	NA	0.67
bis(2-Ethylhexyl)phthalate	108 / 1272	0.62 - 799000	717	H09	6.6 - 10	NA	717
Butylbenzylphthalate	7 / 1254	1.4 - 17	0.68	H18	3.3 - 6.6	NA	0.68
Chrysene	394 / 1391	0.100 - 130	2.2	F11	10 - 13.3	2	2.2
Dibenzo(a,h)Anthracene	111 / 1391	0.100 - 16	0.54	C05	0 - 3.3	0.5	0.54
Dibenzofuran	62 / 1270	0.92 - 85	1.0	A01	3 - 6	NA	1.0
Di-n-butylphthalate	2 / 1254	1.3 - 3.3	0.66	H18	3.3 - 6.6	NA	0.66
Fluoranthene	394 / 1391	0.20 - 445	5.4	A01	3 - 6	4	5.4
Fluorene	92 / 1391	0.20 - 84	1.3	A01	3 - 6	1	1.3
Indeno(1,2,3-cd)Pyrene	138 / 1391	0.29 - 55	1.1	A01	3 - 6	1	1.1
Pentachlorophenol	1 / 1254	17 - 17	2.7	M10	14 - 16	NA	2.7
Phenanthrene	338 / 1391	0.100 - 612	5.3	A01	3 - 6	3	5.3
Phenol	13 / 1254	2.2 - 214	0.99	K14	19 - 21	NA	0.99
Pyrene	357 / 1391	0.27 - 347	4.2	A01	3 - 6	4	4.2
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ							
1,1,1-Trichloroethane	4 / 1251	0.0056 - 0.36	0.0036	D16	12 - 18	NA	0.0036
1,1-Dichloroethane	9 / 1251	0.0054 - 0.18	0.0036	E11	6.66 - 10	NA	0.0036
1,2,3-Trichlorobenzene	4 / 1251	0.0069 - 33	0.031	E11	11 - 13	NA	0.031
1,2,3-Trichloropropane	1 / 1251	0.023 - 0.023	0.0032	A02	6 - 8	NA	0.0032
1,2,4-Trichlorobenzene	7 / 1257	0.0054 - 258	0.33	E11	11 - 13	NA	0.33
1,2,4-Trimethylbenzene	29 / 1290	0.0059 - 30	0.037	RIZ-4	10-12	NA	NCC
1,2-Dichlorobenzene	4 / 1257	0.0066 - 3.6	0.0095	E11	11 - 13	NA	0.0095
1,2-Dichloroethane	2 / 1251	0.030 - 10.0	0.011	D01	0 - 6	NA	0.011
1,2-Dichloropropane	1 / 1251	0.18 - 0.18	0.0033	D01	0 - 6	NA	0.0033
1,3,5-Trimethylbenzene	16 / 1290	0.0061 - 11	0.018	RIZ-4	10-12	NA	NCC
1,3-Dichlorobenzene	2 / 1257	0.21 - 4.9	0.0096	E11	11 - 13	NA	0.0096
1,4-Dichlorobenzene	3 / 1257	0.0084 - 5.7	0.011	E11	11 - 13	NA	0.011
1,4-Dioxane	2 / 1251	0.10 - 0.26	0.12	F04	12 - 14	NA	0.12
2-Butanone	87 / 1292	0.0058 - 1.9	0.030	K11	14 - 18	NA	0.030
2-Chlorotoluene	1 / 1251	0.010 - 0.010	0.0032	H18	19 - 21	NA	0.0032
4-Isopropyltoluene	37 / 1290	0.0025 - 4.5	0.018	RIZ-4	5-7	NA	NCC
Acetone	669 / 1292	0.0069 - 6.0	0.090	K15	19 - 21	NA	0.090
Benzene	24 / 1292	0.0020 - 2.3	0.0092	C01	3.3 - 6.6	NA	0.0092
Carbon Disulfide	148 / 1292	0.0020 - 1.4	0.026	D17	14 - 16	NA	0.026
Chlorobenzene	1 / 1251	0.012 - 0.012	0.0032	J16	3.3 - 6.6	NA	0.0032
Chloroform	9 / 1292	0.0038 - 0.29	0.0064	C01	3.3 - 6.6	NA	0.0064
cis-1,2-Dichloroethene	7 / 1251	0.0053 - 0.78	0.0042	E04	3.3 - 6.6	NA	0.0042
Diethyl Ether	8 / 1251	0.0045 - 0.13	0.0034	F04	6 - 8	NA	0.0034
Ethylbenzene	21 / 1292	0.0020 - 15	0.018	RIZ-4	10-12	NA	0.018
Isopropylbenzene	7 / 1251	0.0053 - 0.11	0.0035	D16	12 - 18	NA	NCC
Methylene Chloride	2 / 1292	0.0100 - 0.029	0.017	CE5-TP-2	5-8	NA	0.017
Naphthalene	182 / 1395	0.0041 - 355	0.87	A01	3 - 6	0.5	0.87
n-Butylbenzene	9 / 1251	0.0043 - 0.84	0.0052	F13	14 - 16	NA	NCC
n-Propylbenzene	7 / 1251	0.021 - 0.27	0.0038	D09	16 - 18	NA	NCC
sec-Butylbenzene	9 / 1251	0.0048 - 1.8	0.0056	D09	16 - 18	NA	NCC
Styrene	7 / 1292	0.0060 - 0.85	0.0043	A01	3 - 6	NA	0.0043
tert-Butylbenzene	2 / 1251	0.013 - 0.28	0.0034	D09	16 - 18	NA	NCC
Tetrachloroethene	2 / 1251	0.010 - 0.018	0.0032	L14	0 - 3.3	NA	0.0032
Toluene	24 / 1292	0.0020 - 11	0.016	RIZ-4	10-12	NA	0.016
Trichloroethene	10 / 1292	0.0053 - 4.3	0.011	E04	3.3 - 6.6	NA	0.011
Vinyl Chloride	3 / 1251	0.012 - 0.065	0.0059	F04	14 - 16	NA	0.0059
Xylenes (Total)	20 / 1298	0.0090 - 36	0.038	RIZ-4	10-12	NA	0.038

Notes:

1. Only analytes detected in one or more representative soil samples are listed in this table.
2. All representative Phase III soil samples and precharacterization soil samples are included in the statistics.
3. These statistics only include analytical results for constituents detected above the laboratory reporting limit (RL).
4. These statistics include all detected constituent concentrations and one-half the RL for constituents not detected above the RL.
5. Background concentration from MassDEP, 2002. Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil. May.
   Values for "Natural" soil were used.
   * indicates the maximum detected concentration is below the MassDEP-identified background concentration.
6. The soil exposure point concentration is based on the arithmetic mean concentration from all soil samples associated with soil being removed during the Release Abatement Measure.
   For copper, iron, and cyanide, the maximum detected concentrations were used as the EPCs due to the relatively small sample size.
7. Concentrations reported in milligrams per kilogram (mg/kg).
8. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene.
   If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation.
   It should be noted that total xylene was reported for certain samples by the laboratory and the total xylene results derived using the above approach might be different from the results reported by the laboratory.

Δ These analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result.
If the analyte was not detected via any analytical method, the minimum RL is listed as the RL for the non-detected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

NCC = Not a Constitute of Concern; EPC = Exposure Point Concentration.
NA = Not Available; COC = Constitute of Concern; bgs = below ground surface.

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Location name:	B/MW-201	B/MW-202	B/MW-203	B/MW-204	B/MW-205	B/MW-206	B/MW-207	B/MW-207	B/MW-207	B/MW-208	B/MW-209	BOR-109-3	C-2-1	CES-1	CES-1	CES-1	CES-2	CES-2	CES-2	CES-2	CES-2-1	CES-2-2	CES-3	CES-3	CES-3	CES-3	CES-4	CES-4
Sample ID:	B/MW-201	B/MW-202	B/MW-203	B/MW-204	B/MW-205	B/MW-206	B/MW-207	B/MW-207	B/MW-207	B/MW-208	B/MW-209	BOR-109-3	C-2-1	CES-1-032101	CES-1		CES-2H	CES-2	CES-2-032101	CES-2L	CES-2-1	CES-2-2	CES-3	CES-3-032101	CES-3		CES-4	CES-4
Screen Interval (ft bgs):	5 - 15'	2 - 12'	2 - 12'	2 - 12'	3 - 13'	2 - 12'	2 - 12'	2 - 12'	2 - 12'	2 - 12'	2 - 12'	4 - 14'	4 - 14'	4 - 11	4 - 11	4 - 11	4 - 13	4 - 13	4 - 13	4 - 13	4 - 14'	4 - 14'	4 - 13	4 - 13	4 - 13	4 - 13	4 - 13	4 - 13
Sample Date:	12/28/12	12/28/12	12/27/12	12/26/12	12/27/12	12/27/12	12/28/12	10/1/15	Temporal Average	12/28/12	12/28/12	3/22/13	3/21/13	3/21/01	12/27/96	Temporal Average	7/20/01	12/27/96	3/21/01	7/20/01	3/22/13	3/22/13	12/27/96	3/21/01	12/13/05	Temporal Average	12/26/12	12/27/96
Analyte																												
Volatile Organic Compounds																												
Acetone	<5.0	23.7	<5.0	<5.0	<5.0	<5.0	<5.0	–	<5	<5.0	<5.0	–	–	< 10	–	<10	–	–	< 10	–	–	–	–	< 10	–	<10	<5.0	–
Benzene	1.0	<0.50	<0.50	<0.50	6.8	<0.50	<0.50	–	<0.5	<0.50	<0.50	–	–	< 1.0	–	<1	–	–	< 1.0	–	–	–	–	< 1.0	–	<1	<0.50	–
Carbon disulfide	<5.0	5.0	<5.0	<5.0	<5.0	<5.0	<5.0	–	<5	<5.0	<5.0	–	–	< 10	–	<10	–	–	< 10	–	–	–	–	< 10	–	<10	<5.0	–
Ethylbenzene	<1.0	<1.0	<1.0	<1.0	6.9	<1.0	<1.0	–	<1	<1.0	<1.0	–	–	< 1.0	–	<1	–	–	< 1.0	–	–	–	–	< 1.0	–	<1	<1.0	–
Naphthalene	<5.0	<5.0	<5.0	<5.0	8.1	<5.0	<5.0	–	<5	<5.0	<5.0	–	–	< 5.0	–	<5	–	–	< 5.0	–	–	–	–	< 5.0	–	<5	<5.0	–
Toluene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	<1	<1.0	<1.0	–	–	< 1.5	–	<1.5	–	–	< 1.5	–	–	–	–	< 1.5	–	<1.5	<1.0	–
1,1,1-Trichloroethane	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	<1	<1.0	<1.0	–	–	< 1.0	–	<1	–	–	< 1.0	–	–	–	–	< 1.0	–	<1	<1.0	–
p/m-Xylene	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	<1	<1.0	<1.0	–	–	< 1.0	–	<1	–	–	< 1.0	–	–	–	–	< 1.0	–	<1	<1.0	–
o-Xylene	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	–	<1	<1.0	<1.0	–	–	< 1.0	–	<1	–	–	< 1.0	–	–	–	–	< 1.0	–	<1	<1.0	–
Xylenes, Total	<1	<1	<1	<1	2.4	<1	<1	–	<1	<1	<1	–	–	<1	–	<1	–	–	<1	–	–	–	–	<1	–	<1	<1	–
Volatile Petroleum Hydrocarbons																												
C_5-C_8 Aliphatics	<50	<50	<50	<50	<50	<50	<50	–	<50	<50	<50	–	–	< 40.0	–	<40	–	–	< 40.0	–	–	–	–	< 40.0	< 50.0	<40	<50	–
C_9-C_{12} Aliphatics	<50	<50	<50	<50	<50	<50	<50	–	<50	<50	<50	–	–	< 40.0	–	<40	–	–	< 40.0	–	–	–	–	< 40.0	< 50.0	<40	<50	–
C_9-C_{10} Aromatics	<50	<50	<50	<50	<50	<50	<50	–	<50	<50	<50	–	–	< 40.0	–	<40	–	–	< 40.0	–	–	–	–	< 40.0	< 50.0	<40	<50	–
Benzene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Methyl tert butyl ether	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 3.0	<3	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 10	<10	–	–
Toluene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m/p Xylene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 2.0	<2	–	–
o-Xylene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 2.0	<2	–	–
Xylenes, Total	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	<2	<2	–	–
Semi Volatile Organic Compounds																												
Acenaphthene	<2.2	<2.4	<2.0	<2.0	17.3	<2.2	<2.1	–	<2.1	<2.1	5.0	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Acenaphthylene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Acetophenone	<11	<12	<10	<10	<11	<11	<11	–	<11	<11	<11	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	10.6	–
Anthracene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Benzo(a)anthracene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Benzo(a)pyrene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Benzo(b)fluoranthene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Benzo(k)fluoranthene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Chrysene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Dibenzofuran	<2.2	<2.4	<2.0	<2.0	8	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	<2.0	–
Fluoranthene	<2.2	<2.4	<2.0	<2.0	3.9	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Fluorene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	2.8	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
1-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	–	–
m&p Cresol(s)	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	–	–
2-Methylnaphthalene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Naphthalene	<2.2	<2.4	<2.0	<2.0	2.4	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Phenanthrene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	4.4	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Phenol	<5.6	<6.0	<5.0	<5.0	<5.7	<5.4	<5.3	–	<5.3	5.5	<5.4	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	<5.1	–
Pyrene	<2.2	<2.4	<2.0	<2.0	<2.3	<2.2	<2.1	–	<2.1	<2.1	<2.2	–	–	–	–	–	< 5.0	–	–	–	–	–	–	–	–	–	<2.0	–
Extractable Petroleum Hydrocarbons																												
C_9-C_{18} Aliphatics	<100	<110	<110	<100	<100	<110	<100	–	<100	<110	<110	–	–	< 100	–	<100	–	–	< 105	–	–	–	–	< 108	< 100	<100	<100	–
C_{19}-C_{36} Aliphatics	<100	<110	<110	<100	<100	<110	<100	–	<100	<110	<110	–	–	104	–	104	–	–	127	–	–	–	–	< 108	< 100	<100	<100	–
C_{11}-C_{22} Aromatics	<100	<110	<110	<100	112	<110	<100	–	<100	<110	<110	–	–	102	–	102	–	–	< 105	–	–	–	–	< 108	< 100	<100	<100	–
Acenaphthene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.527	0.53	–	–
Acenaphthylene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Anthracene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Benzo(a)anthracene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Benzo(a)pyrene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.200	<0.2	–	–
Benzo(b)fluoranthene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Benzo(ghi)perylene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Benzo(k)fluoranthene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Dibenzo(a,h)anthracene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Fluoranthene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Fluorene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Indeno(1,2,3-cd)pyrene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
2-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	2.16	2.2	–	–
Phenanthrene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	< 0.400	<0.4	–	–
Total Petroleum Hydrocarbons																												
TPH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ND	ND	–	ND	–	–	–	–	–	–	–	–	–	ND
PCBs																												
Total PCBs	–	ND	–	–	–	–	–	–	–	–	ND	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ND	–
Pesticides																												
Total Pesticides	–	ND	–	–	–	–	–	–	–	–	ND	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ND	–
Herbicides																												
Total Herbicides	–	ND	–	–	–	–	–	–	–	–	ND	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	ND	–
Dissolved Metals																												
Antimony	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	–	<6	<6.0	<6.0	< 6.0	< 6.0	–	–	–	–	–	–	–	< 6.0	10.5	–	–	–	–	<6.0	–
Arsenic	44.1	7390	10.5	<4.0	<4.0	721	9.8	4.7	7.25	79.7	<4.0	18.4	32	178	380	279	78200	7850	50500	72400	47	114000	1030	1170	301	834	603	3370
Barium	<50	<50	<50	51.1	<50	<50	<50	40.9	32.95	<50	<50	< 50	< 50	10	20	15	–	20	10	–	< 50	< 50	10	< 10	10	8.3	<50	20
Beryllium	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	–	<4	<4.0	<4.0	< 4.0	< 4.0	–	–	–	–	–	–	–	< 4.0	< 4.0	–	–	–	–	6.9	–
Cadmium	<4.0	28.2	<4.0	<4.0	<4.0	<4.0	<4.0	<2.5	<2.5	<4.0	<4.0	< 4.0	< 4.0	< 5.0	< 5.0	<5	–	< 5.0	< 5.0	–	< 4.0	418	< 5.0	< 5.0	< 5.0	<5	7.4	8.0
Chromium	<10	<10	<10	<10	<10	<10	<10	<10.0	<10	<10	<10	< 10	< 10	< 10	< 10	<10	–	< 10	< 10	–	< 10	< 10	50	50	50	50	70	370
Copper	<25	<25	<25	<25	<25	<25	<25	–	<25	<25	<25	< 25	45.5	–	–	–	–	–	–	–	< 25	< 25	–	–	–	–	216	–
Lead	38.1	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<5	<5.0	<5.0	< 5.0	< 5.0	< 10	< 10	<10	< 10	50	< 10	< 10	< 5.0	< 5.0	1200	1420	829	1150	846	310
Mercury	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.20	<0.20	< 0.20	< 0.20	< 0.50	< 0.50	<0.5	–	< 0.50	< 0.50	–	< 0.20	< 0.20	< 0.50	< 0.50	< 0.20	<0.2	<0.20	< 0.50
Nickel	<40	<40	<40	<40	<40	<40	<40	–	<40	<40	<40	< 40	< 40	–	–	–	–	–	–	–	< 40	< 40	–	–	–	–	77.6	–
Selenium	<10	<10	<10	<10	<10	<10	<10	5.1	5.05	<10	<10	< 10	< 10	< 50	< 10	<10	–	< 10	< 50	–	12.9	< 10	< 10	< 50	< 10	<10	<10	< 10
Silver	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5	<5.0	<5.0	< 5.0	< 5.0	< 7.0	< 7.0	<7	–	< 7.0	< 7.0	–	< 5.0	< 5.0	< 7.0	< 7.0	< 7.0	<7	<5.0	< 7.0
Thallium	<5.0	<5.0	<5.0	5	<5.0	<5.0	<5.0	–	<5	<5.0	<5.0	< 5.0	< 5.0	–	–	–	–	–	–	–	< 5.0	< 5.0	–	–	–	–	<5.0	–
Vanadium	<10	<10	<10	<10	<10	<10	<10	–	<10	<10	<10	< 10	< 10	–	–	–	–	–	–	–	< 10	< 10	–	–	–	–	96.7	–
Zinc	75.4	103	<20	1420	<20	43.6	<20	–	<20	254	49.6	77.5	924	–	–	–	–	–	–	–	< 20	241	–	–	–	–	1380	–
Total Metals																												
Antimony	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	<6.0	–	<6	<6.0	<6.0	< 6.0	< 6.0	–	–	–	–	–	–	–	< 6.0	10.0	–	–	–	–	<6.0	–
Arsenic	56.9	7730	15.3	<4.0	<4.0	721	11.3	–	11.3	96.8	<4.0	20.7	36.5	–	–	–	–	–	–	–	55.6	115000	–	–	–	–	605	–

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	B/MW-201	B/MW-202	B/MW-203	B/MW-204	B/MW-205	B/MW-206	B/MW-207	B/MW-207	B/MW-207	B/MW-208
Sample ID:	B/MW-201	B/MW-202	B/MW-203	B/MW-204	B/MW-205	B/MW-206	B/MW-207	B/MW-207	B/MW-207	B/MW-208
Screen Interval (ft bgs):	5 - 15'	2 - 12'	2 - 12'	2 - 12'	3 - 13'	2 - 12'	2 - 12'	2 - 12'	2 - 12'	2 - 12'
Sample Date:	12/28/12	12/28/12	12/27/12	12/26/12	12/27/12	12/27/12	12/28/12	10/1/15	Temporal Average	12/28/12
Analyte										
Barium	<50	<50	<50	<50	<50	<50	<50	--	<50	<50
Beryllium	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	--	<4	<4.0
Cadmium	<4.0	28.9	<4.0	<4.0	<4.0	<4.0	<4.0	--	<4	<4.0
Chromium	<10	<10	<10	<10	<10	<10	<10	--	<10	<10
Copper	414	<25	<25	<25	<25	<25	<25	--	<25	36
Lead	233	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5	402
Mercury	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	--	<0.2	0.23
Nickel	<40	<40	<40	<40	<40	<40	<40	--	<40	<40
Selenium	<10	<10	<10	<10	<10	<10	<10	--	<10	<10
Silver	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5	<5.0
Thallium	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	--	<5	<5.0
Vanadium	<10	<10	<10	<10	<10	<10	<10	--	<10	<10
Zinc	82.6	105	25.5	1380	<20	37.2	<20	--	<20	336
pH adjusted Metals										
Antimony	--	--	--	<6.0	--	--	--	--	--	--
Arsenic	--	--	--	<4.0	--	--	--	--	--	--
Barium	--	--	--	55.8	--	--	--	--	--	--
Beryllium	--	--	--	<4.0	--	--	--	--	--	--
Cadmium	--	--	--	<4.0	--	--	--	--	--	--
Chromium	--	--	--	<10	--	--	--	--	--	--
Copper	--	--	--	<25	--	--	--	--	--	--
Lead	--	--	--	<5.0	--	--	--	--	--	--
Mercury	--	--	--	<0.20	--	--	--	--	--	--
Nickel	--	--	--	<40	--	--	--	--	--	--
Selenium	--	--	--	18.2	--	--	--	--	--	--
Silver	--	--	--	<5.0	--	--	--	--	--	--
Thallium	--	--	--	7	--	--	--	--	--	--
Vanadium	--	--	--	<10	--	--	--	--	--	--
Zinc	--	--	--	1250	--	--	--	--	--	--
Other										
Total Cyanide	15	41	< 10	< 10	51	310	< 10	--	<10	33
ANALYTE WITH MULTIPLE ANALYTICAL METHODSΔ										
Benzene	1.0	<0.5	<0.5	<0.5	6.8	<0.5	<0.5	--	<0.5	<0.5
Ethylbenzene	<1	<1	<1	<1	6.9	<1	<1	--	<1	<1
Naphthalene	<2.2	<2.4	<2	<2	8.1	<2.2	<2.1	--	<2.1	<2.1
Toluene	<1	<1	<1	<1	<1	<1	<1	--	<1	<1
Xylenes, Total	<1	<1	<1	<1	2.4	<1	<1	--	<1	<1
Acenaphthene	<2.2	<2.4	<2	<2	17	<2.2	<2.1	--	<2.1	<2.1
Acenaphthylene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Anthracene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Benzo(a)anthracene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Benzo(a)pyrene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Benzo(b)fluoranthene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Benzo(k)fluoranthene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Chrysene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Fluoranthene	<2.2	<2.4	<2	<2	3.9	<2.2	<2.1	--	<2.1	<2.1
Fluorene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
2-Methylnaphthalene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Phenanthrene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1
Pyrene	<2.2	<2.4	<2	<2	<2.3	<2.2	<2.1	--	<2.1	<2.1

Location name:	B/MW-209	BOR-109-3	C-2-1	CES-1	CES-1	CES-1	CES-2	CES-2	CES-2	CES-2
Sample ID:	B/MW-209	BOR-109-3	C-2-1	CES-1-032101	CES-1		CES-2H	CES-2	CES-2-032101	CES-2L
Screen Interval (ft bgs):	2 - 12'	4 - 14'	4 - 14'	4 - 11	4 - 11	4 - 11	4 - 13	4 - 13	4 - 13	4 - 13
Sample Date:	12/28/12	3/22/13	3/21/13	3/21/01	12/27/96	Temporal Average	7/20/01	12/27/96	3/21/01	7/20/01
Analyte										
Barium	<50	< 50	< 50	--	--	--	--	--	--	--
Beryllium	<4.0	< 4.0	< 4.0	--	--	--	--	--	--	--
Cadmium	<4.0	< 4.0	< 4.0	--	--	--	--	--	--	--
Chromium	<10	< 10	< 10	--	--	--	--	--	--	--
Copper	<25	< 25	70.8	--	--	--	--	--	--	--
Lead	<5.0	< 5.0	38.8	--	--	--	--	--	--	--
Mercury	<0.20	< 0.20	< 0.20	--	--	--	--	--	--	--
Nickel	<40	< 40	< 40	--	--	--	--	--	--	--
Selenium	<10	< 10	< 10	--	--	--	--	--	--	--
Silver	<5.0	< 5.0	< 5.0	--	--	--	--	--	--	--
Thallium	<5.0	< 5.0	< 5.0	--	--	--	--	--	--	--
Vanadium	<10	< 10	< 10	--	--	--	--	--	--	--
Zinc	50.7	80	908	--	--	--	--	--	--	--
pH adjusted Metals										
Antimony	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--
Other										
Total Cyanide	< 10	16	< 10	--	--	--	--	--	--	--
ANALYTE WITH MULTIPLE ANALYTICAL METHODSΔ										
Benzene	<0.5	--	--	<1	--	<1	--	--	<1	--
Ethylbenzene	<1	--	--	<1	--	<1	--	--	<1	--
Naphthalene	<2.2	--	--	<5	--	<5	<5	--	<5	--
Toluene	<1	--	--	<1.5	--	<1.5	--	--	<1.5	--
Xylenes, Total	<1	--	--	<1	--	<1	--	--	<1	--
Acenaphthene	5.0	--	--	--	--	--	<5	--	--	--
Acenaphthylene	<2.2	--	--	--	--	--	<5	--	--	--
Anthracene	<2.2	--	--	--	--	--	<5	--	--	--
Benzo(a)anthracene	<2.2	--	--	--	--	--	<5	--	--	--
Benzo(a)pyrene	<2.2	--	--	--	--	--	<5	--	--	--
Benzo(b)fluoranthene	<2.2	--	--	--	--	--	<5	--	--	--
Benzo(k)fluoranthene	<2.2	--	--	--	--	--	<5	--	--	--
Chrysene	<2.2	--	--	--	--	--	<5	--	--	--
Fluoranthene	<2.2	--	--	--	--	--	<5	--	--	--
Fluorene	2.8	--	--	--	--	--	<5	--	--	--
2-Methylnaphthalene	<2.2	--	--	--	--	--	<5	--	--	--
Phenanthrene	4.4	--	--	--	--	--	<5	--	--	--
Pyrene	<2.2	--	--	--	--	--	<5	--	--	--

Location name:	CES-2-1	CES-2-2	CES-3	CES-3	CES-3	CES-3	CES-4	CES-4
Sample ID:	CES-2-1	CES-2-2	CES-3	CES-3-032101	CES-3		CES-4	CES-4
Screen Interval (ft bgs):	4 - 14'	4 - 14'	4 - 13	4 - 13	4 - 13	4 - 13	4 - 13	4 - 13
Sample Date:	3/22/13	3/22/13	12/27/96	3/21/01	12/13/05	Temporal Average	12/26/12	12/27/96
Analyte								
Barium	< 50	< 50	--	--	--	--	<50	--
Beryllium	< 4.0	< 4.0	--	--	--	--	6.9	--
Cadmium	< 4.0	416	--	--	--	--	7.3	--
Chromium	< 10	< 10	--	--	--	--	70.9	--
Copper	< 25	< 25	--	--	--	--	204	--
Lead	13.9	< 5.0	--	--	--	--	849	--
Mercury	< 0.20	< 0.20	--	--	--	--	<0.20	--
Nickel	< 40	< 40	--	--	--	--	75.1	--
Selenium	13.8	< 10	--	--	--	--	<10	--
Silver	< 5.0	< 5.0	--	--	--	--	<5.0	--
Thallium	< 5.0	< 5.0	--	--	--	--	<5.0	--
Vanadium	< 10	< 10	--	--	--	--	101	--
Zinc	< 20	236	--	--	--	--	1320	--
pH adjusted Metals								
Antimony	--	--	--	--	--	--	<6.0	--
Arsenic	--	--	--	--	--	--	22.7	--
Barium	--	--	--	--	--	--	<50	--
Beryllium	--	--	--	--	--	--	<4.0	--
Cadmium	--	--	--	--	--	--	<4.0	--
Chromium	--	--	--	--	--	--	<10	--
Copper	--	--	--	--	--	--	234	--
Lead	--	--	--	--	--	--	<5.0	--
Mercury	--	--	--	--	--	--	<0.20	--
Nickel	--	--	--	--	--	--	45.6	--
Selenium	--	--	--	--	--	--	16.1	--
Silver	--	--	--	--	--	--	<5.0	--
Thallium	--	--	--	--	--	--	5.8	--
Vanadium	--	--	--	--	--	--	<10	--
Zinc	--	--	--	--	--	--	132	--
Other								
Total Cyanide	610	28	--	--	--	--	110	--
ANALYTE WITH MULTIPLE ANALYTICAL METHODSΔ								
Benzene	--	--	--	<1	--	<1	<0.5	--
Ethylbenzene	--	--	--	<1	--	<1	<1	--
Naphthalene	--	--	--	<5	2.2	2.2	<2	--
Toluene	--	--	--	<1.5	--	<1.5	<1	--
Xylenes, Total	--	--	--	<1	<2	<1	<1	--
Acenaphthene	--	--	--	--	0.53	0.53	<2	--
Acenaphthylene	--	--	--	--	--	--	<2	--
Anthracene	--	--	--	--	<0.4	<0.4	<2	--
Benzo(a)anthracene	--	--	--	--	<0.4	<0.4	<2	--
Benzo(a)pyrene	--	--	--	--	<0.2	<0.2	<2	--
Benzo(b)fluoranthene	--	--	--	--	<0.4	<0.4	<2	--
Benzo(k)fluoranthene	--	--	--	--	<0.4	<0.4	<2	--
Chrysene	--	--	--	--	<0.4	<0.4	<2	--
Fluoranthene	--	--	--	--	<0.4	<0.4	<2	--
Fluorene	--	--	--	--	<0.4	<0.4	<2	--
2-Methylnaphthalene	--	--	--	--	<0.4	<0.4	<2	--
Phenanthrene	--	--	--	--	<0.4	<0.4	<2	--
Pyrene	--	--	--	--	<0.4	<0.4	<2	--

DRAFT

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	CES-5	CES-5	CES-5	CES-5	CES-6	CES-6	CES-6	CES-7	CES-7	CES-7	GZ201	GZ202	GZ203	GZ204	GZ205	GZ206	GZ207	GZ208	GZ209	GZ210	GZ211	GZ212	GZ213	GZ214	MW301D	MW302D	MW310	RIZ-1
Sample ID:	CES-5	CES-5-032101	CES 005		CES-6-032101	CES-6		CES-7	CES-7-032101																MW301D	MW302D	MW310	RIZ-1H
Screen Interval (ft bgs):	4 - 11	4 - 11	4 - 11	4 - 11	4 - 14	4 - 14	4 - 14	4 - 10	4 - 10	4 - 10	4-14	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	19 - 28'	19 - 24'	5 - 15	Unknown
Sample Date:	12/27/96	3/21/01	12/12/05	Temporal Average	3/21/01	12/27/96	Temporal Average	12/27/96	3/21/01	Temporal Average	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	6/19/13	6/19/13	7/8/13	7/20/01
Analyte																												
Volatile Organic Compounds																												
Acetone	--	< 10	--	<10	< 10	--	<10	--	< 10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	< 1.0	--	<1	< 1.0	--	<1	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	< 10	--	<10	< 10	--	<10	--	< 10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	< 1.0	--	<1	< 1.0	--	<1	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	< 5.0	--	<5	< 5.0	--	<5	--	< 5.0	<5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	< 1.5	--	<1.5	< 1.5	--	<1.5	--	< 1.5	<1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	--	< 1.0	--	<1	< 1.0	--	<1	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p/m-Xylene	--	< 1.0	--	<1	< 1.0	--	<1	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	< 1.0	--	<1	< 1.0	--	<1	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	<1	--	<1	<1	--	<1	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons																												
C_5-C_8 Aliphatics	--	< 40.0	< 100	<40	< 40.0	--	<40	--	< 40.0	<40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics	--	< 40.0	< 100	<40	< 40.0	--	<40	--	< 40.0	<40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics	--	< 40.0	< 100	<40	< 40.0	--	<40	--	< 40.0	<40	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert butyl ether	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	< 10	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m/p Xylene	--	--	< 2.0	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi Volatile Organic Compounds																												
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Acetophenone	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Benzo(a)anthracene	--	--	< 0.050	<0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Benzo(a)pyrene	--	--	< 0.10	<0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Benzo(b)fluoranthene	--	--	< 0.050	<0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Benzo(k)fluoranthene	--	--	< 0.20	<0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Chrysene	--	--	< 0.20	<0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Dibenzofuran	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Fluorene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
m&p Cresol(s)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Phenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0
Extractable Petroleum Hydrocarbons																												
C_9-C_{18} Aliphatics	--	< 102	< 150	<102	< 103	--	<103	--	< 103	<103	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics	--	< 102	< 150	<102	138	--	138	--	< 103	<103	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics	--	< 102	< 100	<100	< 103	--	<103	--	< 103	<103	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons																												
TPH	ND	--	--	ND	--	ND	ND	ND	--	ND	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																												
Total PCBs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																												
Total Pesticides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides																												
Total Herbicides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Metals																												
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 6.0	< 30	< 6.0	--
Arsenic	49	12	< 50	29	12	< 5.0	7.25	17	21	19	27.7	586	4.9	8.0	8.8	583	38.2	28.6	572	310	2300	3740	4370	193	331	< 20	57.5	2780
Barium	20	< 10	7.1	11	390	380	385	20	30	25	42.5	46.5	33.1	28.7	26.7	46.9	49.4	50.8	33.0	38.8	29.0	28.5	32.5	47.2	585	< 250	< 50	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 4.0	< 20	< 4.0	--
Cadmium	14	30	11.7	19	< 5.0	< 5.0	<5	< 5.0	11	6.75	<2.5	4.8	<2.5	<2.5	<2.5	6.6	3.1	20.7	5.9	3.7	25.4	42.2	45.1	<2.5	< 4.0	< 20	< 4.0	--
Chromium	< 10	< 10	< 5.0	<5	< 10	< 10	<10	< 10	< 10	<10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	19.5	<10.0	<10.0	<10.0	<10.0	< 10	< 50	< 10	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 25	< 130	< 25	--
Lead	330	866	493	563	< 10	< 10	<10	60	675	367.5	<10.0	49.2	<20.0	<10.0	<20.0	<10.0	<20.0	<20.0	17.3	47.6	27.0	<10.0	14.2	<10.0	< 5.0	< 25	< 5.0	260
Mercury	< 0.50	< 0.50	0.07	0.19	< 0.50	< 0.50	<0.5	< 0.50	< 0.50	<0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.3	<0.20	<0.20	<0.20	< 0.20	0.86	< 0.20	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 40	< 200	375	--
Selenium	< 10	< 50	< 50	<10	< 50	< 10	<10	< 10	< 50	<10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	< 10	< 100	< 10	--
Silver	< 7.0	< 7.0	< 5.0	<5	< 7.0	< 7.0	<7	< 7.0	< 7.0	<7	<5.0	<10.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10.0	<10.0	<5.0	<5.0	<5.0	<10.0	< 5.0	< 25	< 5.0	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0	< 25	< 5.0	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	11	< 50	1610	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 20	< 100	466	--
Total Metals																												
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	CES-5	CES-5	CES-5	CES-5	CES-6	CES-6	CES-6	CES-7	CES-7	CES-7	GZ201	GZ202	GZ203	GZ204	GZ205	GZ206	GZ207	GZ208	GZ209	GZ210	GZ211	GZ212	GZ213	GZ214	MW301D	MW302D	MW310	RIZ-1
Sample ID:	CES-5	CES-5-032101	CES 005		CES-6-032101	CES-6		CES-7	CES-7-032101																MW301D	MW302D	MW310	RIZ-1H
Screen Interval (ft bgs):	4 - 11	4 - 11	4 - 11	4 - 11	4 - 14	4 - 14	4 - 14	4 - 10	4 - 10	4 - 10	4-14	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	5-15	19 - 28'	19 - 24'	5 - 15	Unknown
Sample Date:	12/27/96	3/21/01	12/12/05	Temporal Average	3/21/01	12/27/96	Temporal Average	12/27/96	3/21/01	Temporal Average	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	11/13/14	6/19/13	6/19/13	7/8/13	7/20/01
Analyte																												
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH adjusted Metals																												
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																												
Total Cyanide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10	49	< 10	--
ANALYTE WITH MULTIPLE ANALYTICAL METHO																												
Benzene	--	<1	--	<1	<1	--	<1	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	<1	--	<1	<1	--	<1	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	<5	<1	<1	<5	--	<5	--	<5	<5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Toluene	--	<1.5	--	<1.5	<1.5	--	<1.5	--	<1.5	<1.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	<1	<1	<1	<1	--	<1	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Anthracene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Benzo(a)anthracene	--	--	<0.05	<0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Benzo(a)pyrene	--	--	<0.1	<0.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Benzo(b)fluoranthene	--	--	<0.05	<0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Benzo(k)fluoranthene	--	--	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Chrysene	--	--	<0.2	<0.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Fluoranthene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Fluorene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
2-Methylnaphthalene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Phenanthrene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5
Pyrene	--	--	<1	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5

DRAFT

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Location name:	RIZ-1	RIZ-1	RIZ-10	RIZ-101	RIZ-101	RIZ-101	RIZ-102	RIZ-102	RIZ-102	RIZ-102	RIZ-103	RIZ-103	RIZ-103	RIZ-104	RIZ-104	RIZ-104	RIZ-105	RIZ-105	RIZ-105	RIZ-105	RIZ-106	RIZ-107	RIZ-107	RIZ-107	RIZ-107	RIZ-108	RIZ-109	RIZ-110
Sample ID:	RIZ 1-041201	RIZ-1L	RIZ 10-041201	RIZ-101	RIZ 101	RIZ-101	RIZ-102	RIZ 102	RIZ-102		RIZ 103	RIZ 103	B/MW-200	RIZ 104	RIZ 104		RIZ 105	RIZ 105	RIZ 105		RIZ 106	RIZ-107	RIZ 107	RIZ-107		RIZ 108	RIZ 109	RIZ-110
Screen Interval (ft bgs):	Unknown	Unknown	Unknown	5 - 15*	5 - 15*	5 - 15*	6 - 16*	6 - 16*	6 - 16*	6 - 16*	5 - 15*	5 - 15*	5 - 15*	6 - 16*	6 - 16*	6 - 16*	5 - 15*	5 - 15*	5 - 15*	5 - 15*	Unknown	10 - 20*	10 - 20*	10 - 20*	10 - 20*	Unknown	Unknown	Unknown
Sample Date:	4/12/01	7/20/01	4/12/01	12/26/12	12/12/05	7/19/07	12/27/12	12/12/05	7/19/07	Temporal Average	12/27/12	12/12/05	12/27/12	12/26/12	12/12/05	Temporal Average	12/27/12	10/1/15	12/12/05	Temporal Average	12/13/05	12/27/12	12/13/05	7/19/07	Temporal Average	12/13/05	12/13/05	1/24/06
Analyte																												
Volatile Organic Compounds																												
Acetone	28	–	11	5.6	–	–	<5.0	–	–	<5	<5.0	–	<5.0	<5.0	–	<5	<5.0	–	–	<5	–	<5.0	–	–	<5	–	–	–
Benzene	< 1.0	–	< 1.0	<0.50	–	–	<0.50	–	–	<0.5	<0.50	–	<0.50	<0.50	–	<0.5	<0.50	–	–	<0.5	–	<0.50	–	–	<0.5	–	–	–
Carbon disulfide	< 10	–	< 10	<5.0	–	–	<5.0	–	–	<5	<5.0	–	<5.0	<5.0	–	<5	<5.0	–	–	<5	–	<5.0	–	–	<5	–	–	–
Ethylbenzene	< 1.0	–	< 1.0	<1.0	–	–	<1.0	–	–	<1	<1.0	–	<1.0	<1.0	–	<1	<1.0	–	–	<1	–	<1.0	–	–	<1	–	–	–
Naphthalene	< 5.0	–	< 5.0	<5.0	–	–	<5.0	–	–	<5	<5.0	–	<5.0	<5.0	–	<5	<5.0	–	–	<5	–	<5.0	–	–	<5	–	–	–
Toluene	< 1.5	–	< 1.5	<1.0	–	–	<1.0	–	–	<1	<1.0	–	<1.0	<1.0	–	<1	<1.0	–	–	<1	–	<1.0	–	–	<1	–	–	–
1,1,1-Trichloroethane	< 1.0	–	< 1.0	<1.0	–	–	<1.0	–	–	<1	<1.0	–	<1.0	<1.0	–	<1	<1.0	–	–	<1	–	<1.0	–	–	<1	–	–	–
p/m-Xylene	< 1.0	–	< 1.0	<1.0	–	–	<1.0	–	–	<1	<1.0	–	<1.0	<1.0	–	<1	<1.0	–	–	<1	–	<1.0	–	–	<1	–	–	–
o-Xylene	< 1.0	–	< 1.0	<1.0	–	–	<1.0	–	–	<1	<1.0	–	<1.0	<1.0	–	<1	<1.0	–	–	<1	–	<1.0	–	–	<1	–	–	–
Xylenes, Total	<1	–	<1	<1	–	–	<1	–	–	<1	<1	–	<1	<1	–	<1	<1	–	–	<1	–	<1	–	–	<1	–	–	–
Volatile Petroleum Hydrocarbons																												
C_5-C_8 Aliphatics	< 40.0	–	< 40.0	<50	< 100	–	<50	< 100	–	<50	<50	< 100	<50	<50	< 100	<50	<50	–	< 100	<50	< 50	<50	< 50.0	–	<50	< 50.0	< 50.0	< 100
C_9-C_{12} Aliphatics	< 40.0	–	< 40.0	<50	< 100	–	<50	< 100	–	<50	<50	< 100	<50	<50	< 100	<50	<50	–	< 100	<50	< 50	<50	54.5	–	40	< 50.0	< 50.0	< 100
C_9-C_{10} Aromatics	< 40.0	–	< 40.0	<50	< 100	–	<50	< 100	–	<50	<50	< 100	<50	<50	< 100	<50	<50	–	< 100	<50	< 50	<50	60.1	–	43	< 50.0	< 50.0	< 100
Benzene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Methyl tert butyl ether	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	1.7	1.7	–	–	< 1.0	<1	< 3.0	–	< 3.0	–	<3	< 3.0	< 3.0	1.6
Naphthalene	–	–	–	–	< 10	–	–	< 10	–	<10	–	< 10	–	–	135	135	–	–	< 10	<10	< 10	–	< 10	–	<10	< 10	< 10	< 10
Toluene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m/p Xylene	–	–	–	–	< 2.0	–	–	< 2.0	–	<2	–	< 2.0	–	–	< 2.0	<2	–	–	< 2.0	<2	< 2.0	–	< 2.0	–	<2	3.92	< 2.0	< 2.0
o-Xylene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	< 2.0	–	< 2.0	–	<2	< 2.0	< 2.0	< 1.0
Xylenes, Total	–	–	–	–	<1	–	–	<1	–	<1	–	<1	–	–	<1	<1	–	–	<1	<1	<2	–	<2	–	<2	4.92	<2	<1
Semi Volatile Organic Compounds																												
Acenaphthene	–	–	–	<2.1	< 0.30	–	<2.1	2.01	–	1.5	<2.0	< 0.30	<2.2	<2.2	5.50	3.3	<2.1	–	–	<2.1	< 0.408	<2.2	–	–	<2.2	–	–	1.72
Acenaphthylene	–	–	–	<2.1	< 0.30	–	<2.1	< 0.30	–	<0.3	<2.0	< 0.30	<2.2	<2.2	< 0.28	<0.28	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	0.53
Acetophenone	–	–	–	<10	–	–	<11	–	–	<11	<10	–	<11	<11	–	<11	<11	–	–	<11	–	<11	–	–	<11	–	–	–
Anthracene	–	–	–	<2.1	< 0.20	–	<2.1	1.13	–	1.1	<2.0	< 0.20	<2.2	<2.2	1.58	1.3	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	0.89
Benzo(a)anthracene	–	–	–	<2.1	< 0.050	–	<2.1	0.11	–	0.58	<2.0	< 0.050	<2.2	<2.2	< 0.047	<0.047	<2.1	–	< 0.050	<0.05	–	<2.2	–	–	<2.2	–	–	0.54
Benzo(a)pyrene	–	–	–	<2.1	< 0.10	–	<2.1	< 0.10	–	<0.1	<2.0	< 0.10	<2.2	<2.2	< 0.093	<0.093	<2.1	–	< 0.10	<0.1	–	<2.2	–	–	<2.2	–	–	0.35
Benzo(b)fluoranthene	–	–	–	<2.1	< 0.050	–	<2.1	< 0.050	–	<0.05	<2.0	< 0.050	<2.2	<2.2	< 0.047	<0.047	<2.1	–	< 0.050	<0.05	–	<2.2	–	–	<2.2	–	–	0.44
Benzo(k)fluoranthene	–	–	–	<2.1	< 0.20	–	<2.1	< 0.20	–	<0.2	<2.0	< 0.20	<2.2	<2.2	< 0.186	<0.186	<2.1	–	< 0.20	<0.2	–	<2.2	–	–	<2.2	–	–	0.24
Chrysene	–	–	–	<2.1	< 0.20	–	<2.1	< 0.20	–	<0.2	<2.0	< 0.20	<2.2	<2.2	< 0.19	<0.19	<2.1	–	< 0.20	<0.2	–	<2.2	–	–	<2.2	–	–	0.51
Dibenzofuran	–	–	–	<2.1	–	–	<2.1	–	–	<2.1	<2.0	–	<2.2	<2.2	–	<2.2	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	–
Fluoranthene	–	–	–	<2.1	< 0.50	–	<2.1	1.25	–	1.2	<2.0	< 0.50	<2.2	<2.2	1.19	1.1	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	1.48
Fluorene	–	–	–	<2.1	< 1.0	–	<2.1	2.26	–	1.7	<2.0	< 1.0	<2.2	<2.2	4.82	3.0	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	1.11
1-Methylnaphthalene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
m&p Cresol(s)	–	–	–	–	< 20	–	–	< 20	–	<20	–	< 20	–	–	22.4	22	–	–	–	–	–	–	–	–	–	–	–	< 20
2-Methylnaphthalene	–	–	–	<2.1	< 1.0	–	<2.1	2.06	–	1.6	<2.0	< 1.0	<2.2	<2.2	9.59	5.3	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	< 1.0
Naphthalene	–	–	–	<2.1	1.6	–	<2.1	4.28	–	2.7	<2.0	< 1.0	<2.2	<2.2	41.4	21	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	< 1.0
Phenanthrene	–	–	–	<2.1	0.24	–	<2.1	5.67	–	3.4	<2.0	< 0.10	<2.2	<2.2	9.82	5.5	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	1.51
Phenol	–	–	–	<5.2	–	–	<5.3	–	–	<5.3	<5.0	–	<5.5	<5.6	–	<5.6	<5.3	–	–	<5.3	–	<5.6	–	–	<5.6	–	–	–
Pyrene	–	–	–	<2.1	< 1.0	–	<2.1	< 1.0	–	<1	<2.0	< 1.0	<2.2	<2.2	< 0.93	<0.93	<2.1	–	–	<2.1	–	<2.2	–	–	<2.2	–	–	1.16
Extractable Petroleum Hydrocarbons																												
C_9-C_{18} Aliphatics	< 103	–	< 104	<110	< 150	–	<110	< 150	–	<110	<110	< 150	<110	<100	< 150	<100	<110	–	< 150	<110	317	<110	< 102	–	<102	< 102	< 102	< 150
C_{19}-C_{36} Aliphatics	< 103	–	219	<110	< 150	–	<110	< 150	–	<110	<110	< 150	<110	<100	< 150	<100	<110	–	< 150	<110	3010	<110	158	–	107	108	< 102	< 150
C_{11}-C_{22} Aromatics	< 103	–	411	<110	< 100	–	<110	< 100	–	<100	<110	< 100	<110	<100	< 100	<100	<110	–	< 100	<100	651	<110	< 102	–	<102	< 102	< 102	131
Acenaphthene	–	–	–	–	< 1.0	–	–	2.1	–	2.1	–	< 1.0	–	–	8.0	8.0	–	–	< 1.0	<1	< 0.408	–	< 0.408	–	<0.408	< 0.408	< 0.408	< 1.0
Acenaphthylene	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Anthracene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	2.0	2.0	–	–	< 1.0	<1	< 0.408	–	0.723	–	0.72	< 0.408	< 0.408	< 1.0
Benzo(a)anthracene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.692	–	1.04	–	1.0	0.898	< 0.408	< 1.0
Benzo(a)pyrene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.520	–	0.834	–	0.83	0.753	< 0.200	< 1.0
Benzo(b)fluoranthene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.610	–	1.20	–	1.2	0.580	< 0.408	< 1.0
Benzo(ghi)perylene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.463	–	0.793	–	0.79	0.446	< 0.408	< 1.0
Benzo(k)fluoranthene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.850	–	0.776	–	0.78	0.851	< 0.408	< 1.0
Chrysene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.920	–	1.29	–	1.3	1.21	< 0.408	< 1.0
Dibenzo(a,h)anthracene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	< 0.408	–	0.659	–	0.66	< 0.408	< 0.408	< 1.0
Fluoranthene	–	–	–	–	< 1.0	–	–	1.4	–	1.4	–	< 1.0	–	–	1.4	1.4	–	–	< 1.0	<1	1.24	–	1.45	–	1.5	1.81	< 0.408	1.9
Fluorene	–	–	–	–	< 1.0	–	–	2.3	–	2.3	–	< 1.0	–	–	5.8	5.8	–	–	< 1.0	<1	< 0.408	–	< 0.408	–	<0.408	< 0.408	< 0.408	< 1.0
Indeno(1,2,3-cd)pyrene	–	–	–	–	< 1.0	–	–	< 1.0	–	<1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	0.446	–	0.779	–	0.78	< 0.408	< 0.408	< 1.0
2-Methylnaphthalene	–	–	–	–	< 1.0	–	–	2.2	–	2.2	–	< 1.0	–	–	12.3	12	–	–	< 1.0	<1	< 0.408	–	< 0.408	–	<0.408	< 0.408	< 0.408	< 1.0
Naphthalene	–	–	–	–	3.0	–	–	4.2	–	4.2	–	< 1.0	–	–	51.7	52	–	–	< 1.0	<1	0.452	–	< 0.408	–	<0.408	< 0.408	< 0.408	3.5
Phenanthrene	–	–	–	–	< 1.0	–	–	5.4	–	5.4	–	< 1.0	–	–	11.4	11	–	–	< 1.0	<1	0.964	–	1.26	–	1.3	1.14	< 0.408	2.8
Pyrene	–	–	–	–	< 1.0	–	–	1.1	–	1.1	–	< 1.0	–	–	< 1.0	<1	–	–	< 1.0	<1	1.15	–	1.23	–	1.2	1.65	< 0.408	< 1.0
Total Petroleum Hydrocarbons																												
TPH	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
PCBs																												
Total PCBs	–	–	–	–	–	–	–	–	–	–	ND	–	ND	ND	–	ND	–	–	–	–	–	ND	–	–	ND	–	–	–
Pesticides																												
Total Pesticides	–	–	–	–	–	–	–	–	–	–	ND	–	ND	ND	–	ND	–	–	–	–	–	ND	–	–	ND	–	–	–
Herbicides																												
Total Herbicides	–	–	–	–	–	–	–	–	–	–	ND	–	ND	ND	–	ND	–	–	–	–	–	ND	–	–	ND	–	–	–
Dissolved Metals																												
Antimony	–	–	–	8.9	–	–	<6.0	–	–	<6	<6.0	–	<6.0	<6.0	–	<6	<6.0	–	–	<6	–	<6.0	–	–	<6	–	–	–
Arsenic	3380	5390	31	1640	270	2080	1620	2980	2020	2207	33400	2030	34300	19.9	240	130	7.4	9.3	320	112	–	13.8	51	< 50	30	1480	22	< 50
Barium	30	–	50	<50	25.7	–	<50	7.7	–	16	<50	20.6	<50	<50	48.1	37	113	30.9	1.19	48	–	<50	20	–	23	< 10	20	17.5
Beryllium	–	–	–	<4.0	–	–	<4.0	–	–	<4	<4.0	–	<4.0	12.4	–	12	<4.0	–	–	<4	–	<4.0	–	–	<4	–	–	–
Cadmium	20	–	< 5.0	8.5	5.0	–	4.7	< 5.0	–	3.6	142	7.4	141	<4.0	< 5.0	<4	<4.0	<2.5	< 5.0	<2.5	–	<4.0	< 5.0	–	<4	5.0	< 5.0	< 5.0
Chromium	780	–	< 10	25.2	14	–	<10	< 5.0	–	<5	<10	5.0	<10	<10	< 5.0	<5	<10	<10.0	< 5.0	<5	–	<10	< 10	–	<10	10	< 10	64
Copper	–	–	–	371	–	–	<25	–	–	<25	66.5	–	61.1	<25	–	<25	<25	–	–	<25	–	<25	–	–	<25	–	–	–
Lead	456	190	13	1270	894	498	<5.0	< 15	1.0	3.7	<5.0	104	<5.0	<5.0	< 15	<5	30.9	<10.0	176	71	–	<5.0	< 10	< 1.0	<1	< 10	< 10	< 15
Mercury	< 0.5	–	< 0.5	<0.20	0.05	–	<0.20	< 0.040	–	<0.04	<0.20	0.06	<0.20	<0.20	< 0.04	<0.04	<0.20	<0.20	< 0.04	<0.04	–	<0.20	< 0.20	–	<0.2	< 0.20	< 0.20	< 0.04
Nickel	–	–	–	65.1	–	–	<40	–	–	<40	<40	–	<40	<40	–	<40	<40	–	–	<40	–	<40	–	–	<40	–	–	–
Selenium	< 40	–	< 10	10.6	< 50	–	<10	< 50	–	<10	<10	< 50	<10	<20	< 50	<20	<10	16.9	< 50	16	–	13	< 10	–	9.0	< 10	< 10	< 50
Silver	< 20	–	< 10	<5.0	< 5.0	–	<5.0	< 5.0	–	<5	<5.0	< 5.0	<5.0	<5.0	< 5.0	<5	<5.0	<5.0	< 5.0	<5	–	<5.0	< 7.0	–	<5	< 7.0	< 7.0	< 5.0
Thallium	–	–	–	<5.0	–	–	<5.0	–	–	<5	<5.0	–	<5.0	<5.0	–	<5	<5.0	–	–	<5	–	<5.0	–	–	<5	–	–	–
Vanadium	–	–	–	34.5	–	–	<10	–	–	<10	<10	–	<10	17.1	–	17	<10	–	–	<10	–	<10	–	–	<10	–	–	–
Zinc	–	–	–	658	–	–	63.7	–	–	64	343	–	351	172	–	172	44.6	–	–	45	–	21.2	–	–	21	–	–	–
Total Metals																												
Antimony	–	–	–	9.3	–	–	<6.0	–	–	<6	<6.0	–	<6.0	<6.0	–	<6	6.2	–	–	6.2	–	<6.0	–	–	<6	–	–	–
Arsenic	–	–	–	1660	–	–	1740	–	–	1740	34000	–	33900	17.7	–	18	20.6	–	–	21	–	14.8	–	–	15	–	–	–

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	RIZ-1	RIZ-1	RIZ-10	RIZ-101	RIZ-101	RIZ-101	RIZ-102	RIZ-102	RIZ-102	RIZ-102	RIZ-103	RIZ-103	RIZ-103	RIZ-104	RIZ-104	RIZ-104	RIZ-105	RIZ-105	RIZ-105	RIZ-105	RIZ-106	RIZ-107	RIZ-107	RIZ-107	RIZ-107	RIZ-108	RIZ-109	RIZ-110
Sample ID:	RIZ 1-041201	RIZ-1L	RIZ 10-041201	RIZ-101	RIZ 101	RIZ-101	RIZ-102	RIZ 102	RIZ-102		RIZ 103	RIZ 103	B/MW-200	RIZ 104	RIZ 104		RIZ 105	RIZ 105	RIZ 105		RIZ 106	RIZ-107	RIZ 107	RIZ-107		RIZ 108	RIZ 109	RIZ-110
Screen Interval (ft bgs):	Unknown	Unknown	Unknown	5 - 15*	5 - 15*	5 - 15*	6 - 16*	6 - 16*	6 - 16*	6 - 16*	5 - 15*	5 - 15*	5 - 15*	6 - 16*	6 - 16*	6 - 16*	5 - 15*	5 - 15*	5 - 15*	5 - 15*	Unknown	10 - 20*	10 - 20*	10 - 20*	10 - 20*	Unknown	Unknown	Unknown
Sample Date:	4/12/01	7/20/01	4/12/01	12/26/12	12/12/05	7/19/07	12/27/12	12/12/05	7/19/07	Temporal Average	12/27/12	12/12/05	12/27/12	12/26/12	12/12/05	Temporal Average	12/27/12	10/1/15	12/12/05	Temporal Average	12/13/05	12/27/12	12/13/05	7/19/07	Temporal Average	12/13/05	12/13/05	1/24/06
Analyte																												
Barium	--	--	--	<50	--	--	<50	--	--	<50	<50	--	<50	<100	--	<100	221	--	--	221	--	<50	--	--	<50	--	--	--
Beryllium	--	--	--	<4.0	--	--	<4.0	--	--	<4	<4.0	--	<4.0	15.8	--	16	<4.0	--	--	<4	--	<4.0	--	--	<4	--	--	--
Cadmium	--	--	--	8.3	--	--	5.5	--	--	5.5	127	--	144	<4.0	--	<4	<4.0	--	--	<4	--	<4.0	--	--	<4	--	--	--
Chromium	--	--	--	25.5	--	--	<10	--	--	<10	<10	--	<10	<10	--	<10	<10	--	--	<10	--	<10	--	--	<10	--	--	--
Copper	--	--	--	373	--	--	<25	--	--	<25	70.8	--	69.6	<25	--	<25	<25	--	--	<25	--	<25	--	--	<25	--	--	--
Lead	--	--	--	1270	--	--	9	--	--	9.0	<5.0	--	<5.0	<5.0	--	<5	104	--	--	104	--	<5.0	--	--	<5	--	--	--
Mercury	--	--	--	<0.20	--	--	<0.20	--	--	<0.2	<0.20	--	<0.20	<0.20	--	<0.2	0.41	--	--	0.41	--	<0.20	--	--	<0.2	--	--	--
Nickel	--	--	--	63.1	--	--	<40	--	--	<40	<40	--	<40	<40	--	<40	<40	--	--	<40	--	<40	--	--	<40	--	--	--
Selenium	--	--	--	10.9	--	--	<10	--	--	<10	<10	--	<10	<20	--	<20	<10	--	--	<10	--	13	--	--	13	--	--	--
Silver	--	--	--	6.3	--	--	<5.0	--	--	<5	<5.0	--	<5.0	<5.0	--	<5	<5.0	--	--	<5	--	<5.0	--	--	<5	--	--	--
Thallium	--	--	--	<5.0	--	--	<5.0	--	--	<5	<5.0	--	<5.0	<5.0	--	<5	<5.0	--	--	<5	--	<5.0	--	--	<5	--	--	--
Vanadium	--	--	--	34	--	--	<10	--	--	<10	<10	--	<10	17.6	--	18	<10	--	--	<10	--	<10	--	--	<10	--	--	--
Zinc	--	--	--	647	--	--	62.6	--	--	63	347	--	347	157	--	157	44.1	--	--	44	--	20.8	--	--	21	--	--	--
pH adjusted Metals																												
Antimony	--	--	--	<6.0	--	--	--	--	--	--	<6.0	--	--	<12	--	<12	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	173	--	--	--	--	--	--	7160	--	--	5.2	--	5.2	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	<50	--	--	--	--	--	--	<50	--	--	<50	--	<50	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	<4.0	--	--	--	--	--	--	<4.0	--	--	<4.0	--	<4	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	<4.0	--	--	--	--	--	--	91.5	--	--	<4.0	--	<4	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	<10	--	--	--	--	--	--	<10	--	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	256	--	--	--	--	--	--	42.7	--	--	<25	--	<25	--	--	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	16.9	--	--	--	--	--	--	<5.0	--	--	<5.0	--	<5	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	<0.20	--	--	--	--	--	--	1.1	--	--	<0.20	--	<0.2	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	<40	--	--	--	--	--	--	<40	--	--	<40	--	<40	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	15.2	--	--	--	--	--	--	13.2	--	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	<5.0	--	--	--	--	--	--	<5.0	--	--	<5.0	--	<5	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	7.5	--	--	--	--	--	--	5.2	--	--	10.5	--	11	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	<10	--	--	--	--	--	--	<10	--	--	<10	--	<10	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	84	--	--	--	--	--	--	99.3	--	--	<20	--	<20	--	--	--	--	--	--	--	--	--	--	--	--
Other																												
Total Cyanide	--	--	--	330	--	--	38	--	--	38	60	--	59	28	--	28	< 10	--	--	<10	--	< 10	--	--	<10	--	--	--
ANALYTE WITH MULTIPLE ANALYTICAL METHO																												
Benzene	<1	--	<1	<0.5	--	--	<0.5	--	--	<0.5	<0.5	--	<0.5	<0.5	--	<0.5	<0.5	--	--	<0.5	--	<0.5	--	--	<0.5	--	--	--
Ethylbenzene	<1	--	<1	<1	--	--	<1	--	--	<1	<1	--	<1	<1	--	<1	<1	--	--	<1	--	<1	--	--	<1	--	--	--
Naphthalene	<5	--	<5	<2.1	3.0	--	<2.1	4.3	--	4.2	<2	<1	<2.2	<2.2	135	135	<2.1	--	<1	<1	0.45	<2.2	<0.408	--	<0.408	<0.408	<0.408	3.5
Toluene	<1.5	--	<1.5	<1	--	--	<1	--	--	<1	<1	--	<1	<1	--	<1	<1	--	--	<1	--	<1	--	--	<1	--	--	--
Xylenes, Total	<1	--	<1	<1	<1	--	<1	<1	--	<1	<1	<1	<1	<1	<1	<1	<1	--	<1	<1	<2	<1	<2	--	<1	4.9	<2	<1
Acenaphthene	--	--	--	<2.1	<0.3	--	<2.1	2.1	--	2.1	<2	<0.3	<2.2	<2.2	8.0	8.0	<2.1	--	<1	<1	<0.408	<2.2	<0.408	--	<0.408	<0.408	<0.408	1.7
Acenaphthylene	--	--	--	<2.1	<0.3	--	<2.1	<0.3	--	<0.3	<2	<0.3	<2.2	<2.2	<0.28	<0.28	<2.1	--	--	<2.1	--	<2.2	--	--	<2.2	--	--	0.53
Anthracene	--	--	--	<2.1	<0.2	--	<2.1	1.1	--	1.1	<2	<0.2	<2.2	<2.2	2.0	2.0	<2.1	--	<1	<1	<0.408	<2.2	0.72	--	0.72	<0.408	<0.408	0.89
Benzo(a)anthracene	--	--	--	<2.1	<0.05	--	<2.1	0.11	--	0.58	<2	<0.05	<2.2	<2.2	<0.047	<0.047	<2.1	--	<0.05	<0.05	0.69	<2.2	1.0	--	1.0	0.90	<0.408	0.54
Benzo(a)pyrene	--	--	--	<2.1	<0.1	--	<2.1	<0.1	--	<0.1	<2	<0.1	<2.2	<2.2	<0.093	<0.093	<2.1	--	<0.1	<0.1	0.52	<2.2	0.83	--	0.83	0.75	<0.2	0.35
Benzo(b)fluoranthene	--	--	--	<2.1	<0.05	--	<2.1	<0.05	--	<0.05	<2	<0.05	<2.2	<2.2	<0.047	<0.047	<2.1	--	<0.05	<0.05	0.61	<2.2	1.2	--	1.2	0.58	<0.408	0.44
Benzo(k)fluoranthene	--	--	--	<2.1	<0.2	--	<2.1	<0.2	--	<0.2	<2	<0.2	<2.2	<2.2	<0.186	<0.186	<2.1	--	<0.2	<0.2	0.85	<2.2	0.78	--	0.78	0.85	<0.408	0.24
Chrysene	--	--	--	<2.1	<0.2	--	<2.1	<0.2	--	<0.2	<2	<0.2	<2.2	<2.2	<0.19	<0.19	<2.1	--	<0.2	<0.2	0.92	<2.2	1.3	--	1.3	1.2	<0.408	0.51
Fluoranthene	--	--	--	<2.1	<0.5	--	<2.1	1.4	--	1.4	<2	<0.5	<2.2	<2.2	1.4	1.4	<2.1	--	<1	<1	1.2	<2.2	1.5	--	1.5	1.8	<0.408	1.9
Fluorene	--	--	--	<2.1	<1	--	<2.1	2.3	--	2.3	<2	<1	<2.2	<2.2	5.8	5.8	<2.1	--	<1	<1	<0.408	<2.2	<0.408	--	<0.408	<0.408	<0.408	1.1
2-Methylnaphthalene	--	--	--	<2.1	<1	--	<2.1	2.2	--	2.2	<2	<1	<2.2	<2.2	12	12	<2.1	--	<1	<1	<0.408	<2.2	<0.408	--	<0.408	<0.408	<0.408	<1
Phenanthrene	--	--	--	<2.1	0.24	--	<2.1	5.7	--	5.4	<2	<0.1	<2.2	<2.2	11	11	<2.1	--	<1	<1	0.96	<2.2	1.3	--	1.3	1.1	<0.408	2.8
Pyrene	--	--	--	<2.1	<1	--	<2.1	1.1	--	1.1	<2	<1	<2.2	<2.2	<0.93	<0.93	<2.1	--	<1	<1	1.2	<2.2	1.2	--	1.2	1.7	<0.408	1.2

DRAFT

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES

1 Horizon Way
Everett, Massachusetts

DRAFT

Location name:	RIZ-2	RIZ-3	RIZ-4	RIZ-4	RIZ-4	RIZ-4-4	RIZ-4-4	RIZ-4-4	RIZ-5	RIZ-5	RIZ-5	RIZ-5	RIZ-6	RIZ-7	RIZ-8	RIZ-9	RIZ-9	RIZ-9	RIZ-9	SHORE-1	SHORE-4	SHORE-7	SHORE-8	SHORE-9	TGW301	TGW302	TGW303	TGW304
Sample ID:	RIZ 2-041201	RIZ 3-041201	RIZ 4-041201	RIZ-4		RIZ-4-4	RIZ-4-4		RIZ-5	RIZ-5	RIZ 5-041201		RIZ 6-041201	RIZ 7-041201	RIZ 8-041201	RIZ-009	RIZ 9-041201	RIZ-9		SHORE-1	SHORE-4	SHORE-7	SHORE-8	SHORE-9	TGW301	TGW302	TGW303	TGW304
Screen Interval (ft bgs):	Unknown	Unknown	Unknown	Unknown	Unknown	3 - 13'	3 - 13'	3 - 13'	3 - 13*	3 - 13*	3 - 13*	3 - 13*	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	4.5 - 14.5'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	2 - 12	5 - 15	2 - 12	2 - 12
Sample Date:	4/12/01	4/12/01	4/12/01	7/20/01	Temporal Average	4/17/13	3/22/13	Temporal Average	12/28/12	10/1/15	4/12/01	Temporal Average	4/12/01	4/12/01	4/12/01	1/24/06	4/12/01	7/20/01	Temporal Average	3/21/13	3/21/13	3/21/13	3/21/13	3/21/13	6/6/13	6/6/13	6/6/13	6/6/13
Analyte																												
Volatile Organic Compounds																												
Acetone	< 10	< 10	< 500	--	<500	--	--	--	<5.0	--	20	11	< 10	< 10	< 10	--	< 10	--	<10	--	--	--	--	--	--	--	--	--
Benzene	< 1.0	< 1.0	72	--	72	--	--	--	<0.50	--	< 1.0	<0.5	< 1.0	< 1.0	< 1.0	--	< 1.0	--	<1	--	--	--	--	--	--	--	--	--
Carbon disulfide	< 10	12	< 500	--	<500	--	--	--	<5.0	--	< 10	<5	< 10	< 10	< 10	--	< 10	--	<10	--	--	--	--	--	--	--	--	--
Ethylbenzene	< 1.0	< 1.0	85	--	85	--	--	--	<1.0	--	1.3	0.90	< 1.0	< 1.0	< 1.0	--	< 1.0	--	<1	--	--	--	--	--	--	--	--	--
Naphthalene	33	< 5.0	< 250	--	<250	--	--	--	<5.0	--	< 5.0	<5	< 5.0	< 5.0	< 5.0	--	< 5.0	--	<5	--	--	--	--	--	--	--	--	--
Toluene	< 1.5	< 1.5	75	--	75	--	--	--	<1.0	--	2.0	1.3	< 1.5	< 1.5	< 1.5	--	< 1.5	--	<1.5	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	< 1.0	1.7	< 50	--	<50	--	--	--	<1.0	--	< 1.0	<1	< 1.0	< 1.0	< 1.0	--	< 1.0	--	<1	--	--	--	--	--	--	--	--	--
p/m-Xylene	< 1.0	< 1.0	80	--	80	--	--	--	<1.0	--	5.8	3.2	< 1.0	< 1.0	< 1.0	--	< 1.0	--	<1	--	--	--	--	--	--	--	--	--
o-Xylene	< 1.0	< 1.0	51	--	51	--	--	--	<1.0	--	1.5	1.0	< 1.0	< 1.0	< 1.0	--	< 1.0	--	<1	--	--	--	--	--	--	--	--	--
Xylenes, Total	<1	<1	131	--	131	--	--	--	<1	--	7.3	4.2	<1	<1	<1	--	<1	--	<1	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons																												
C_5-C_8 Aliphatics	< 40.0	< 40.0	1700	--	1700	--	< 50	<50	<50	--	< 40.0	<40	< 40.0	< 40.0	< 40.0	< 100	< 40.0	--	<40	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics	< 40.0	< 40.0	12000	--	12000	--	< 50	<50	<50	--	80.0	53	< 40.0	< 40.0	< 40.0	< 100	< 40.0	--	<40	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics	< 40.0	< 40.0	7250	--	7250	--	< 50	<50	<50	--	< 40.0	<40	< 40.0	< 40.0	< 40.0	< 100	< 40.0	--	<40	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	< 1.0	<1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	< 2.0	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert butyl ether	--	--	--	--	--	--	< 1.0	<1	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	< 3.0	<3	--	--	--	--	--	--	--	< 10	--	--	<10	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	< 2.0	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m/p Xylene	--	--	--	--	--	--	< 2.0	<2	--	--	--	--	--	--	--	< 2.0	--	--	<2	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	--	--	--	< 2.0	<2	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	--	--	--	--	<2	<2	--	--	--	--	--	--	--	<1	--	--	<1	--	--	--	--	--	--	--	--	--
Semi Volatile Organic Compounds																												
Acenaphthene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.30	--	< 5.0	<0.3	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.30	--	< 5.0	<0.3	--	--	--	--	--	--	--	--	--
Acetophenone	--	--	--	--	--	--	--	--	<10	--	--	<10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.20	--	< 5.0	<0.2	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.050	--	< 5.0	<0.05	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.10	--	< 5.0	<0.1	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.050	--	< 5.0	<0.05	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.20	--	< 5.0	<0.2	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.20	--	< 5.0	<0.2	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	<2.0	--	--	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.50	--	< 5.0	<0.5	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 1.0	--	< 5.0	<1	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	--	--	--	16	16	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	--	--
m&p Cresol(s)	--	--	--	< 5.6	<5.6	--	--	--	--	--	--	--	--	--	--	< 20	--	< 5.0	<5	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	11	11	--	--	--	<2.0	--	--	<2	--	--	--	< 1.0	--	< 5.0	<1	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	32	32	--	--	--	<2.0	--	--	<2	--	--	--	< 1.0	--	< 5.0	<1	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 0.10	--	< 5.0	<0.1	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	<5.0	--	--	<5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	< 5.6	<5.6	--	--	--	<2.0	--	--	<2	--	--	--	< 1.0	--	< 5.0	<1	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons																												
C_9-C_{18} Aliphatics	< 100	< 100	< 100	--	<100	--	< 100	<100	<110	--	< 102	<102	< 102	< 100	< 100	< 150	< 106	--	<106	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics	< 100	229	< 100	--	<100	--	< 100	<100	<110	--	< 102	<102	< 102	< 100	< 100	< 150	< 106	--	<106	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics	129	< 100	515	--	515	--	< 100	<100	<110	--	< 102	<102	< 102	< 100	< 100	< 100	< 106	--	<100	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	< 5.0	<5	--	--	--	--	--	--	--	< 1.0	--	--	<1	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons																												
TPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																												
Total PCBs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																												
Total Pesticides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides																												
Total Herbicides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Metals																												
Antimony	--	--	--	--	--	19	--	19	<6.0	--	--	<6	--	--	--	--	--	--	--	< 6.0	< 6.0	< 6.0	7.0	18.5	< 6.0	7.5	< 6.0	< 6.0
Arsenic	676	< 10	46	--	46	46.2	--	46	12.3	8.2	< 40	14	203	< 10	< 10	< 50	< 10	--	<10	2080	369	55.6	5840	1660	27.1	23.5	< 4.0	6.7
Barium	10	20	150	--	150	71.6	--	72	90.4	88.3	30	70	30	< 10	10	31.2	< 10	--	18	< 50	< 50	< 50	< 50	< 50	109	86.9	< 50	131
Beryllium	--	--	--	--	--	<4	--	<4	<4.0	--	--	<4	--	--	--	--	--	--	--	< 4.0	12.0	< 4.0	6.1	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Cadmium	< 5.0	< 5.0	< 5.0	--	<5	<4	--	<4	<4.0	3.8	114	40	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--	<5	< 4.0	14.7	< 4.0	16.4	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium	< 10	< 10	< 10	--	<10	<10	--	<10	<10	<10.0	< 20	<10	< 10	< 10	< 10	43	< 10	--	24	< 10	21.1	< 10	55.8	61.6	< 10	< 10	< 10	< 10
Copper	--	--	--	--	--	<25	--	<25	41.2	--	--	41	--	--	--	--	--	--	--	< 25	107	< 25	< 25	375	< 25	< 25	< 25	< 25
Lead	< 10	< 10	< 10	--	<10	8.3	--	8.3	<5.0	<10.0	109	39	< 10	< 10	< 10	< 15	< 10	--	<10	< 5.0	1110	< 5.0	935	1210	< 5.0	< 5.0	< 5.0	< 5.0
Mercury	< 0.5	< 0.5	< 0.5	--	<0.5	<0.2	--	<0.2	<0.20	<0.20	< 0.5	<0.2	< 0.5	< 0.5	< 0.5	< 0.04	< 0.5	--	<0.04	< 0.20	< 0.20	< 0.20	2.7	1.2	< 0.20	< 0.20	< 0.20	< 0.20
Nickel	--	--	--	--	--	<40	--	<40	<40	--	--	<40	--	--	--	--	--	--	--	< 40	101	< 40	249	66.5	< 40	< 40	< 40	< 40
Selenium	< 10	< 10	< 10	--	<10	<10	--	<10	<10	<5.0	< 40	<5	< 10	< 10	< 10	< 50	< 10	--	<10	< 10	< 10	< 10	< 10	17.1	< 10	< 10	< 10	< 10
Silver	< 10	< 10	< 10	--	<10	<5	--	<5	<5.0	<5.0	< 20	<5	< 10	< 10	< 10	< 5.0	< 10	--	<5	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Thallium	--	--	--	--	--	<5	--	<5	<5.0	--	--	<5	--	--	--	--	--	--	--	< 5.0	< 5.0	< 5.0	< 5.0	9.6	< 5.0	< 5.0	< 5.0	< 5.0
Vanadium	--	--	--	--	--	<10	--	<10	<10	--	--	<10	--	--	--	--	--	--	--	< 10	38.9	< 10	75.1	88.1	10.1	< 10	< 10	< 10
Zinc	--	--	--	--	--	201	--	201	409	--	--	409	--	--	--	--	--	--	--	136	1490	200	2990	798	23.5	< 20	< 20	277
Total Metals																												
Antimony	--	--	--	--	--	--	--	--	<6.0	--	--	<6	--	--	--	--	--	--	--	< 6.0	< 6.0	< 6.0	11.4	20	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	16.2	--	--	16	--	--	--	--	--	--	--	2100	370	57.1	5640	1670	--	--	--	--

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	RIZ-2	RIZ-3	RIZ-4	RIZ-4	RIZ-4	RIZ-4-4	RIZ-4-4	RIZ-4-4	RIZ-5	RIZ-5	RIZ-5	RIZ-5	RIZ-6	RIZ-7	RIZ-8	RIZ-9	RIZ-9	RIZ-9	RIZ-9	SHORE-1	SHORE-4	SHORE-7	SHORE-8	SHORE-9	TGW301	TGW302	TGW303	TGW304
Sample ID:	RIZ 2-041201	RIZ 3-041201	RIZ 4-041201	RIZ-4		RIZ-4-4	RIZ-4-4		RIZ-5	RIZ-5	RIZ 5-041201		RIZ 6-041201	RIZ 7-041201	RIZ 8-041201	RIZ-009	RIZ 9-041201	RIZ-9		SHORE-1	SHORE-4	SHORE-7	SHORE-8	SHORE-9	TGW301	TGW302	TGW303	TGW304
Screen Interval (ft bgs):	Unknown	Unknown	Unknown	Unknown	Unknown	3 - 13'	3 - 13'	3 - 13'	3 - 13*	3 - 13*	3 - 13*	3 - 13*	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	4.5 - 14.5'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	2 - 12	5 - 15	2 - 12	2 - 12
Sample Date:	4/12/01	4/12/01	4/12/01	7/20/01	Temporal Average	4/17/13	3/22/13	Temporal Average	12/28/12	10/1/15	4/12/01	Temporal Average	4/12/01	4/12/01	4/12/01	1/24/06	4/12/01	7/20/01	Temporal Average	3/21/13	3/21/13	3/21/13	3/21/13	3/21/13	6/6/13	6/6/13	6/6/13	6/6/13
Analyte																												
Barium	--	--	--	--	--	--	--	--	93.5	--	--	94	--	--	--	--	--	--	--	< 50	< 50	< 50	< 50	54.8	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	<4.0	--	--	<4	--	--	--	--	--	--	--	< 4.0	12.1	< 4.0	6.0	< 4.0	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	<4.0	--	--	<4	--	--	--	--	--	--	--	< 4.0	15.3	< 4.0	15.3	< 4.0	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	<10	--	--	<10	--	--	--	--	--	--	--	< 10	21.6	< 10	54.2	63.4	--	--	--	--
Copper	--	--	--	--	--	--	--	--	46.4	--	--	46	--	--	--	--	--	--	--	< 25	147	< 25	52.6	395	--	--	--	--
Lead	--	--	--	--	--	--	--	--	<5.0	--	--	<5	--	--	--	--	--	--	--	< 5.0	1160	34.4	999	1280	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	<0.20	--	--	<0.2	--	--	--	--	--	--	--	< 0.20	< 0.20	< 0.20	8.4	2.8	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	<40	--	--	<40	--	--	--	--	--	--	--	< 40	103	< 40	245	66.9	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	<10	--	--	<10	--	--	--	--	--	--	--	< 10	< 10	< 10	< 10	18.6	--	--	--	--
Silver	--	--	--	--	--	--	--	--	<5.0	--	--	<5	--	--	--	--	--	--	--	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	<5.0	--	--	<5	--	--	--	--	--	--	--	< 5.0	< 5.0	< 5.0	< 5.0	9.3	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	<10	--	--	<10	--	--	--	--	--	--	--	< 10	38.4	11.2	73.4	88.8	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	423	--	--	423	--	--	--	--	--	--	--	133	1540	194	2950	804	--	--	--	--
pH adjusted Metals																												
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																												
Total Cyanide	--	--	--	--	--	--	--	--	< 10	--	--	<10	--	--	--	--	--	--	--	< 10	23	190	92	51	54	< 10	40	< 10
ANALYTE WITH MULTIPLE ANALYTICAL METHO																												
Benzene	<1	<1	72	--	72	--	<1	<1	<0.5	--	<1	<0.5	<1	<1	<1	--	<1	--	<1	--	--	--	--	--	--	--	--	--
Ethylbenzene	<1	<1	85	--	85	--	<2	<2	<1	--	1.3	0.9	<1	<1	<1	--	<1	--	<1	--	--	--	--	--	--	--	--	--
Naphthalene	33	<5	<250	32	32	--	<3	<3	<2	--	<5	<2	<5	<5	<5	<1	<5	<5	<1	--	--	--	--	--	--	--	--	--
Toluene	<1.5	<1.5	75	--	75	--	<2	<2	<1	--	2.0	1.3	<1.5	<1.5	<1.5	--	<1.5	--	<1.5	--	--	--	--	--	--	--	--	--
Xylenes, Total	<1	<1	131	--	131	--	<2	<2	<1	--	7.3	4.2	<1	<1	<1	<1	<1	--	<1	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.3	--	<5	<0.3	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.3	--	<5	<0.3	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.2	--	<5	<0.2	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.05	--	<5	<0.05	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.1	--	<5	<0.1	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.05	--	<5	<0.05	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.2	--	<5	<0.2	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.2	--	<5	<0.2	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.5	--	<5	<0.5	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<1	--	<5	<1	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	11	11	--	<5	<5	<2	--	--	<2	--	--	--	<1	--	<5	<1	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<0.1	--	<5	<0.1	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	<5.6	<5.6	--	<5	<5	<2	--	--	<2	--	--	--	<1	--	<5	<1	--	--	--	--	--	--	--	--	--

DRAFT

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

DRAFT

Location name:	TGW305	TGW306	TGW307	TGW308	TGW309	TGW310	TGW311	TGW312	TGW313	TGW314	TGW315	TGW316	TGW317	TGW318	W-4	W-4	W-4	W-6	W-6	W-6	MW901
Sample ID:	TGW305	TGW306	TGW307	TGW308	TGW309	TGW310	TGW311	TGW312	TGW313	TGW314	TGW315	TGW316	TGW317	TGW318	W-4	W-4		W-6	MW900		MW901
Screen Interval (ft bgs):	2 - 12	2 - 12	2 - 12	2 - 12	2 - 12	5 - 15	2 - 12	2 - 12	2 - 12	5 - 15	2 - 12	2 - 12	2 - 12	2 - 12	4 - 14'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	2 - 12
Sample Date:	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	7/3/13	7/3/13	7/3/13	3/22/13	10/1/15	Temporal Average	3/22/13	3/22/13	Average	6/6/13
Analyte																					
Volatile Organic Compounds																					
Acetone	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
p/m-Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Volatile Petroleum Hydrocarbons																					
C_5-C_8 Aliphatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{12} Aliphatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_9-C_{10} Aromatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Methyl tert butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m/p Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
o-Xylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi Volatile Organic Compounds																					
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acetophenone	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
m&p Cresol(s)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenol	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Extractable Petroleum Hydrocarbons																					
C_9-C_{18} Aliphatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{19}-C_{36} Aliphatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
C_{11}-C_{22} Aromatics	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(ghi)perylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total Petroleum Hydrocarbons																					
TPH	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs																					
Total PCBs	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pesticides																					
Total Pesticides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Herbicides																					
Total Herbicides	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dissolved Metals																					
Antimony	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	6.6	--	--	--	< 6.0	--	<6	< 6.0	< 6.0	<6	< 6.0
Arsenic	15.8	94.7	49.3	489	2050	27.6	870	395	43.6	28.6	28300	1430	294	765	710	435	573	16.6	17.2	17	892
Barium	75.6	61.7	69.6	< 50	164	130	< 50	< 50	106	73.5	77.5	--	--	--	< 50	45.7	35	< 50	< 50	<50	< 50
Beryllium	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0	15.8	--	--	--	< 4.0	--	<4	< 4.0	< 4.0	<4	< 4.0
Cadmium	< 4.0	< 4.0	< 4.0	< 4.0	12.9	< 4.0	4.6	< 4.0	< 4.0	< 4.0	135	--	--	--	< 4.0	4.9	3.5	< 4.0	< 4.0	<4	4.4
Chromium	< 10	< 10	< 10	< 10	< 10	29.8	< 10	< 10	11.2	16.1	192	--	--	--	< 10	<10.0	<10	< 10	< 10	<10	< 10
Copper	< 25	< 25	< 25	< 25	< 25	109	< 25	< 25	< 25	< 25	81.4	--	--	--	< 25	--	<25	< 25	< 25	<25	< 25
Lead	< 5.0	< 5.0	< 5.0	< 5.0	10.7	117	< 5.0	13.2	< 5.0	< 5.0	119	183	6	45.2	< 5.0	<10.0	<5	< 5.0	< 5.0	<5	< 5.0
Mercury	< 0.20	< 0.20	< 0.20	< 0.20	0.6	0.43	0.21	0.36	< 0.20	< 0.20	0.31	--	--	--	< 0.20	<0.20	<0.2	< 0.20	< 0.20	<0.2	< 0.20
Nickel	< 40	< 40	< 40	< 40	45.8	< 40	< 40	62.4	< 40	158	315	--	--	--	< 40	--	<40	< 40	< 40	<40	< 40
Selenium	< 10	< 10	< 10	< 10	< 20	< 10	< 10	< 20	< 10	< 10	< 50	--	--	--	< 10	<5.0	<5	< 10	< 10	<10	< 10
Silver	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	--	--	--	< 5.0	<5.0	<5	< 5.0	< 5.0	<5	< 5.0
Thallium	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	21.3	--	--	--	< 5.0	--	<5	< 5.0	< 5.0	<5	< 5.0
Vanadium	< 10	< 10	< 10	< 10	< 10	402	< 10	20.2	< 10	< 10	152	--	--	--	< 10	--	<10	< 10	< 10	<10	< 10
Zinc	35.6	< 20	197	< 20	221	228	20.1	758	505	1160	3020	--	--	--	178	--	178	80.8	76.2	79	< 20
Total Metals																					
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 6.0	--	<6	< 6.0	< 6.0	<6	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	741	--	741	24.2	27.8	26	--

TABLE H-6
LABORATORY TESTING RESULTS-GROUNDWATER SAMPLES
1 Horizon Way
Everett, Massachusetts

Location name:	TGW305	TGW306	TGW307	TGW308	TGW309	TGW310	TGW311	TGW312	TGW313	TGW314	TGW315	TGW316	TGW317	TGW318	W-4	W-4	W-4	W-6	W-6	W-6	MW901
Sample ID:	TGW305	TGW306	TGW307	TGW308	TGW309	TGW310	TGW311	TGW312	TGW313	TGW314	TGW315	TGW316	TGW317	TGW318	W-4	W-4		W-6	MW900		MW901
Screen Interval (ft bgs):	2 - 12	2 - 12	2 - 12	2 - 12	2 - 12	5 - 15	2 - 12	2 - 12	2 - 12	5 - 15	2 - 12	2 - 12	2 - 12	2 - 12	4 - 14'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	4 - 14'	2 - 12
Sample Date:	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	6/6/13	7/3/13	7/3/13	7/3/13	3/22/13	10/1/15	Temporal Average	3/22/13	3/22/13	Average	6/6/13
Analyte																					
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 50	--	<50	< 50	< 50	<50	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 4.0	--	<4	< 4.0	< 4.0	<4	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 4.0	--	<4	< 4.0	< 4.0	<4	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10	--	<10	< 10	< 10	<10	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	111	--	111	42.9	48.8	46	--
Lead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	125	--	125	15.3	17.7	17	--
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.20	--	<0.2	< 0.20	< 0.20	<0.2	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 40	--	<40	< 40	< 40	<40	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10	--	<10	< 10	< 10	<10	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0	--	<5	< 5.0	< 5.0	<5	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 5.0	--	<5	< 5.0	< 5.0	<5	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 10	--	<10	< 10	< 10	<10	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	181	--	181	107	116	112	--
pH adjusted Metals																					
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Other																					
Total Cyanide	< 10	20	15	< 10	< 10	21	11	91	14	30	< 10	--	--	--	< 10	--	<10	100	79	90	14
ANALYTE WITH MULTIPLE ANALYTICAL METHOD																					
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Xylenes, Total	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chrysene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluoranthene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fluorene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Phenanthrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pyrene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

DRAFT

Notes:

1. In general, analytes detected in at least one sample are reported here. For a complete list of analytes see the laboratory data sheets.
2. "<" = The analyte was not detected at a concentration above the listed laboratory reporting limit (RL).
3. Results are presented in micrograms per liter (ug/L), or parts per billion (ppb).
4. ND = The analyte was not detected above the laboratory reporting limit.
5. ft bgs = feet below ground surface.
6. Samples for dissolved metals analysis were filtered in the field with a 0.45-micrometer filter.
7. B/MW-200 is a duplicate sample of RIZ 103.
8. *Screen interval is assumed to be 10 feet, and is assumed to end at the bottom of the well.
9. The pH of the "pH Adjusted" samples was adjusted by the laboratory to 7 standard units, left for 4 hours, and then filtered with a 0.45-micron filter prior to chemical analysis.
10. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene. If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation. It should be noted that total xylene was reported for certain samples by the laboratory and the total xylene results derived using the above approach might be different from the results reported by the laboratory.
11. The highlighted groundwater results in the table were not quantitatively used in the risk characterization and the rationales are summarized below:
    (a) Green-highlighted results were associated with areas where either in-situ solidification/stabilization will be conducted or soil will be removed prior to the RAM work.
    (b) Gray-highlighted results were used to calculate temporal average concentrations for the wells; and the temporal average concentrations were used to derive the groundwater EPCs for this risk characterization.
    (c) Yellow-highlighted duplicate pair results were averaged and the average results were used in the risk characterization.
12. Temporal averages were calculated for wells with multiple rounds of sampling results. When the analyte was deteced in at least one round, the half reporting limit was used for the nondect for the average calculation. If the analyte was not detected during any sampling round, the temporal average was presented as a nondect and the lowest laboratory reporting limit was used to represent the reporting limit for the temporal average result.
13. Screen intervals for CES-1 through CES-7 are from pre-muck depths and have not been adjusted.

Δ. Certain analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result. If the analyte was not detected via any method, the minimum RL is listed as the RL for the nondetected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte wa:

TABLE H-7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS[1]
1 Horizon Way
Everett, Massachusetts

Constituent[2]	Frequency of Detection	Range Detected (µg/L)[3]	Location of Maximum Concentration	Arithmetic Mean Concentration (µg/L)[4]	Median Concentration (µg/L)[4]	Exposure Point Concentration (µg/L)[5]
Volatile Organic Compounds						
Acetone	3 / 27	11 - 24	B/MW-202	14	5.0	14
Carbon disulfide	2 / 27	5.0 - 12	RIZ-3	13	5.0	12
1,1,1-Trichloroethane	1 / 27	1.7	RIZ-3	1.5	0.50	1.5
Volatile Petroleum Hydrocarbons						
C5-C8 Aliphatics	1 / 32	1700	RIZ-4	76	25	76
C9-C12 Aliphatics	3 / 32	40 - 12000	RIZ-4	399	25	NCC
C9-C10 Aromatics	2 / 32	43 - 7250	RIZ-4	250	25	250
Methyl tert butyl ether	2 / 12	1.6 - 1.7	RIZ-104	1.1	1.5	1.1
Semi Volatile Organic Compounds						
Dibenzofuran	1 / 14	8.0	B/MW-205	1.6	1.1	1.6
1-Methylnaphthalene	1 / 2	16	RIZ-4	9.3	9.3	9.3
m&p Cresol(s)	1 / 5	22	RIZ-104	9.5	10	9.5
Phenol	1 / 14	5.5	B/MW-208	2.9	2.7	2.9
Extractable Petroleum Hydrocarbons						
C9-C18 Aliphatics	1 / 32	317	RIZ-106	61	51	399
C19-C36 Aliphatics	7 / 32	104 - 3010	RIZ-106	164	52	164
C11-C22 Aromatics	7 / 32	102 - 651	RIZ-106	104	51	104
Benzo(ghi)perylene	3 / 12	0.45 - 0.79	RIZ-107	0.63	0.50	0.63
Dibenzo(a,h)anthracene	1 / 12	0.66	RIZ-107	0.58	0.50	0.58
Indeno(1,2,3-cd)pyrene	2 / 12	0.45 - 0.78	RIZ-107	0.61	0.50	0.61
Dissolved Metals						
Antimony	1 / 34	19	RIZ-4-4	3.5	3.0	3.5
Arsenic	57 / 66	4.9 - 7390	B/MW-202	558	45	Note 5
Barium	44 / 63	8.3 - 385	CES-6	46	27	46
Beryllium	1 / 34	12	RIZ-104	2.3	2.0	Note 5
Cadmium	18 / 63	3.1 - 45	GZ213	5.9	2.0	5.9
Chromium	7 / 63	10 - 64	RIZ-110	7.5	5.0	7.5
Copper	3 / 34	41 - 109	TGW310	17	13	Note 5
Lead	18 / 66	3.7 - 1150	CES-3	44	5.0	Note 5
Mercury	5 / 63	0.19 - 0.60	TGW309	0.14	0.100	0.14
Nickel	3 / 34	46 - 375	MW310	35	20	35
Selenium	3 / 63	5.1 - 16	RIZ-105	5.1	5.0	Note 5
Thallium	1 / 34	5.0	B/MW-204	2.6	2.5	2.6
Vanadium	3 / 34	17 - 1610	MW310	64	5.0	64
Zinc	27 / 34	20 - 1420	B/MW-204	224	91	224
Total Metals						
Antimony	1 / 20	6.2	RIZ-105	3.2	3.0	Note 5
Arsenic	17 / 20	11 - 7730	B/MW-202	671	23	671
Barium	2 / 20	94 - 221	RIZ-105	39	25	Note 5
Beryllium	1 / 20	16	RIZ-104	2.7	2.0	2.7
Cadmium	2 / 20	5.5 - 29	B/MW-202	3.5	2.0	Note 5
Copper	6 / 20	36 - 414	B/MW-201	45	13	45
Lead	8 / 20	9.0 - 402	B/MW-208	50	2.5	50
Mercury	2 / 20	0.23 - 0.41	RIZ-105	0.12	0.100	Note 5
Selenium	1 / 20	13	RIZ-107	5.7	5.0	5.7
Vanadium	2 / 20	11 - 18	RIZ-104	5.9	5.0	Note 5
Zinc	18 / 20	21 - 1380	B/MW-204	218	94	Note 5
pH adjusted Metals						
Arsenic	1 / 2	5.2	RIZ-104	3.6	3.6	Note 5
Barium	1 / 2	56	B/MW-204	40	40	Note 5
Selenium	1 / 2	18	B/MW-204	12	12	Note 5
Thallium	2 / 2	7.0 - 11	RIZ-104	8.8	8.8	Note 5
Zinc	1 / 2	1250	B/MW-204	630	630	Note 5
Other						
Total Cyanide	18 / 33	11 - 310	B/MW-206	32	14	32
ANALYTE WITH MULTIPLE ANALYTICAL						
Benzene	3 / 28	1.0 - 72	RIZ-4	3.4	0.50	3.4
Ethylbenzene	3 / 28	0.90 - 85	RIZ-4	4.0	0.50	4.0
Naphthalene	8 / 32	0.45 - 135	RIZ-104	8.2	1.2	8.2
Toluene	2 / 28	1.3 - 75	RIZ-4	3.5	0.63	3.5
Xylenes, Total	4 / 32	2.4 - 131	RIZ-4	5.2	0.50	5.2
Acenaphthene	6 / 23	0.53 - 17	B/MW-205	2.3	1.1	2.3
Acenaphthylene	1 / 18	0.53	RIZ-110	1.1	1.1	0.53
Anthracene	4 / 23	0.72 - 2.0	RIZ-104	1.0	1.0	1.0
Benzo(a)anthracene	5 / 23	0.54 - 1.0	RIZ-107	0.91	1.0	0.91
Benzo(a)pyrene	4 / 23	0.35 - 0.83	RIZ-107	0.86	1.0	0.83
Benzo(b)fluoranthene	4 / 23	0.44 - 1.2	RIZ-107	0.87	1.0	0.87
Benzo(k)fluoranthene	4 / 23	0.24 - 0.85	RIZ-108	0.88	1.0	0.85
Chrysene	4 / 23	0.51 - 1.3	RIZ-107	0.94	1.0	0.94
Fluoranthene	7 / 23	1.2 - 3.9	B/MW-205	1.3	1.1	1.3
Fluorene	4 / 23	1.1 - 5.8	RIZ-104	1.3	1.1	1.3
2-Methylnaphthalene	3 / 23	2.2 - 12	RIZ-104	1.9	1.0	1.9
Phenanthrene	7 / 23	0.96 - 11	RIZ-104	2.0	1.1	2.0
Pyrene	5 / 23	1.1 - 1.7	RIZ-108	1.1	1.1	1.1

DRAFT

Notes:

1. All results but the highlighted results in the Groundwater Analytical Results table are included in the statistics. For wells with multiple rounds of samples, the temporal averages were used for the statistics.
2. Only detected analytes are listed.
3. These statistics only include analytical results for samples in which a constituent was detected above the laboratory reporting limit (RL).
4. These statistics include all detected constituent concentrations and one-half the RL for samples in which a constituent was not detected above the RL.
5. The groundwater exposure point concentration is based on the arithmetic mean concentration among the monitoring wells representative of the Site conditions for the RAM
For carbon disulfide, acenaphthylene, benzo(a)pyrene, and benzo(k)fluoranthene, the maximum detected concentrations were used as the EPCs due to the elevated laboratory reporting limits for certain non-detects.
For each metal, the higher value of the arithmetic mean concentrations between total metal and dissolved metal results was used as the EPC.
The pH adjusted metal results were not considered representative of the groundwater conditions and therefore were not used to derive groundwater EPCs.
7. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene.
If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation.
It should be noted that total xylene was reported for certain samples by the laboratory, along with the m/p-xylene and o-xylene results, and the total xylene results derived using the above approach might be different from the results reported by the laboratory.
8. The arithmetic mean concentration of C9-C12 aliphatic hydrocarbon is greater than the arithmetic mean of C9-C18 aliphatic hydrocarbon; the former was used as the EPC for the identified COC C9-C18 aliphatic hydrocarbon fraction.

Δ. Certain analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result. If the analyte was not detected via any method, the minimum RL is listed as the RL for the nondetected sample result. The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

NCC = Not a constitute of concern; COC = constitute of concern; TPH = total petroleum hydrocarbons.
EPH = Extractable Petroleum Hydrocarbon; VPH = Volatile Petroleum Hydrocarbon; EPC = Exposure Point Concentration.

TABLE H-8
SEDIMENT ANALYTICAL RESULTS
1 Horizon Way
Everett, Masschusetts

DRAFT

Sample ID: Sample Time: Analyte	GZ-1 0-1ft 10:14	GZ-2 1-2ft 10:08	GZ-3B 0-1ft 09:55	GZ-4 09:20	GZ-5B 7-8ft 09:04	GZ-6 1-2ft 09:15	GZ-7 01-ft 11:47	GZ-8 10:40	GZ-9 1-2ft 12:02	GZ-10 2-3ft 11:02	GZ-11 1-2ft 10:53	GZ-12 1-2ft 12:14	GZ-13 13:20	GZ-14 2-3ft 13:38	GZ-15 14:02	GZ-16 0-1ft 13:29	GZ-17 4-5ft 13:53	GZ-18 5-6ft 14:14	Comp GZ-13 14 16 13:20	Comp GZ-8 10 11 10:40	Comp GZ-15 17 18 13:53	Comp GZ-4 5B 6 09:04	Comp GZ-1 2 3B 09:55	Comp GZ-7 9 12 11:47
1,1,1,2-Tetrachloroethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,1,1-Trichloroethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	<0.0025	<0.0026	<0.0038	<0.0055	<0.0071	<0.0032	<0.0023	<0.0021	<0.0034	<0.0030	<0.0031	<0.0027	<0.0031	<0.0028	<0.0042	<0.0026	<0.0039	<0.0035	-	-	-	-	-	-
1,1,2-Trichloroethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,1-Dichloroethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,1-Dichloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,1-Dichloropropene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2,3-Trichlorobenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2,3-Trichloropropane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2,4-Trichlorobenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2,4-Trimethylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.157	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0974	0.207	-	-	-	-	-	-
1,2-Dibromo-3-Chloropropane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2-Dibromoethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2-Dichlorobenzene	<0.0061	<0.0064	0.0119	0.0144	0.321	0.0148	<0.0057	<0.0052	<0.0084	0.0081	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.48	0.0562	-	-	-	-	-	-
1,2-Dichloroethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,2-Dichloropropane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,3,5-Trimethylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0749	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0808	0.0397	-	-	-	-	-	-
1,3-Dichlorobenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,3-Dichloropropane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
1,4-Dichlorobenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0249	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	0.0745	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0111	0.244	-	-	-	-	-	-
1,4-Dioxane	<0.123	<0.128	<0.189	<0.277	<0.355	<0.161	<0.114	<0.103	<0.168	<0.151	<0.156	<0.134	<0.155	<0.138	<0.210	<0.132	<0.193	<0.176	-	-	-	-	-	-
2,2-Dichloropropane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
2-Butanone	0.0252	0.0344	0.0827	0.0411	0.0615	0.029	0.013	0.0219	0.017	0.145	0.0689	<0.0134	0.0394	0.0145	0.0363	0.0195	<0.0193	0.129	-	-	-	-	-	-
2-Chlorotoluene	<0.0061	<0.0064	<0.0095	<0.0138	0.57	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0552	0.319	-	-	-	-	-	-
2-Hexanone	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
4-Chlorotoluene	<0.0061	<0.0064	<0.0095	<0.0138	0.103	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	0.0912	-	-	-	-	-	-
4-Isopropyltoluene	<0.0061	<0.0064	<0.0095	<0.0138	0.0388	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	0.0446	-	-	-	-	-	-
4-Methyl-2-Pentanone	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Acetone	0.195	0.246	0.522	0.258	0.407	0.198	0.0882	0.156	0.0911	0.803	0.461	0.0557	0.226	0.0994	0.215	0.127	0.335	0.708	-	-	-	-	-	-
Benzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0394	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	0.0103	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.109	0.1	-	-	-	-	-	-
Bromobenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Bromochloromethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Bromodichloromethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Bromoform	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Bromomethane	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Carbon Disulfide	0.0091	<0.0064	0.0175	0.0575	0.0283	0.0135	0.0133	<0.0052	0.02	<0.0076	0.0191	<0.0067	0.0173	0.0281	0.0156	0.0224	0.0226	0.049	-	-	-	-	-	-
Carbon Tetrachloride	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Chlorobenzene	<0.0061	<0.0064	<0.0095	0.0201	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	0.0452	1.15	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0687	1.89	-	-	-	-	-	-
Chloroethane	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Chloroform	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Chloromethane	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
cis-1,2-Dichloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0137	<0.0088	-	-	-	-	-	-
cis-1,3-Dichloropropene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Dibromochloromethane	<0.0025	<0.0026	<0.0038	<0.0055	<0.0071	<0.0032	<0.0023	<0.0021	<0.0034	<0.0030	<0.0031	<0.0027	<0.0031	<0.0028	<0.0042	<0.0026	<0.0039	<0.0035	-	-	-	-	-	-
Dibromomethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Dichlorodifluoromethane	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Diethyl Ether	<0.0061	<0.0064	<0.0095	<0.0138	0.027	0.0103	<0.0057	<0.0052	<0.0084	<0.0076	0.0091	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0594	0.0206	-	-	-	-	-	-
Di-isopropyl ether	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Ethyl tertiary-butyl ether	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Ethylbenzene	<0.0061	<0.0064	<0.0095	0.0215	0.074	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0382	0.0794	-	-	-	-	-	-
Hexachlorobutadiene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Isopropylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0225	0.0186	-	-	-	-	-	-
Methyl tert-Butyl Ether	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Methylene Chloride	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Naphthalene	<0.0061	<0.0064	<0.0095	<0.0138	0.374	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	0.0084	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0123	0.47	-	-	-	-	-	-
n-Butylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0641	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	0.0501	-	-	-	-	-	-
n-Propylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0267	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0126	0.0251	-	-	-	-	-	-
sec-Butylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0206	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0392	0.0193	-	-	-	-	-	-
Styrene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
tert-Butylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Tertiary-amyl methyl ether	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Tetrachloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Tetrahydrofuran	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Toluene	<0.0061	<0.0064	<0.0095	<0.0138	0.0449	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	0.0104	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0608	0.0608	-	-	-	-	-	-
trans-1,2-Dichloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
trans-1,3-Dichloropropene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Trichloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0684	<0.0088	-	-	-	-	-	-
Trichlorofluoromethane	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	<0.0096	<0.0088	-	-	-	-	-	-
Vinyl Chloride	<0.0123	<0.0128	<0.0189	<0.0277	<0.0355	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	<0.0193	<0.0176	-	-	-	-	-	-
Xylene O	<0.0061	<0.0064	<0.0095	<0.0138	0.0654	<0.0080	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0225	0.0683	-	-	-	-	-	-
Xylene P,M	<0.0123	<0.0128	<0.0189	<0.0277	0.0484	<0.0161	<0.0114	<0.0103	<0.0168	<0.0151	<0.0156	<0.0134	<0.0155	<0.0138	<0.0210	<0.0132	0.021	0.103	-	-	-	-	-	-
Xylenes (Total)	<0.0061	<0.0064	<0.0095	<0.0138	0.1138	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0435	0.1713	-	-	-	-	-	-
1,1,1,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,1-Dichloropropene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2,3-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2,3-Trichloropropane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2,4-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	0.663	-	-	-	-	-	-
1,2-Dibromo-3-Chloropropane	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
1,2-Dibromoethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	0.451	-	-	-	-	-	1.79	<0.414	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-

TABLE H-8
SEDIMENT ANALYTICAL RESULTS
1 Horizon Way
Everett, Masschusetts

Sample ID: Sample Time: Analyte	GZ-1 0-1ft 10:14	GZ-2 1-2ft 10:08	GZ-3B 0-1ft 09:55	GZ-4 09:20	GZ-5B 7-8ft 09:04	GZ-6 1-2ft 09:15	GZ-7 01-ft 11:47	GZ-8 10:40	GZ-9 1-2ft 12:02	GZ-10 2-3ft 11:02	GZ-11 1-2ft 10:53	GZ-12 1-2ft 12:14	GZ-13 13:20	GZ-14 2-3ft 13:38	GZ-15 14:02	GZ-16 0-1ft 13:29	GZ-17 4-5ft 13:53	GZ-18 5-6ft 14:14	Comp GZ-13 14 16 13:20	Comp GZ-8 10 11 10:40	Comp GZ-15 17 18 13:53	Comp GZ-4 5B 6 09:04	Comp GZ-1 2 3B 09:55	Comp GZ-7 9 12 11:47
1,3,5-Trimethylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,3-Dichloropropane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	0.853	-	-	-	-	-	<0.332	0.812	-	-	-	-	-	-
1,4-Dioxane - Screen	-	-	-	-	-	-	-	-	-	-	<27.5	-	-	-	-	-	<33.2	<41.4	-	-	-	-	-	-
2,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
2-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	0.712	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
4-Chlorotoluene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
4-Isopropyltoluene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	1.67	-	-	-	-	-	2.68	<1.66	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	0.365	<0.414	-	-	-	-	-	-
Bromobenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Bromochloromethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	0.717	<0.414	-	-	-	-	-	-
Carbon Tetrachloride	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	5.6	-	-	-	-	-	0.425	10.9	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
cis-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Dibromomethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Dichlorodifluoromethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Diethyl Ether	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Di-isopropyl ether	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Ethyl tertiary-butyl ether	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Isopropylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Methyl tert-Butyl Ether	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
Naphthalene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	2.65	-	-	-	-	-	-
n-Butylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
n-Propylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
sec-Butylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
tert-Butylbenzene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Tertiary-amyl methyl ether	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Tetrahydrofuran	-	-	-	-	-	-	-	-	-	-	<1.10	-	-	-	-	-	<1.33	<1.66	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
trans-1,2-Dichloroethene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	0.445	<0.414	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Xylene O	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
Xylene P,M	-	-	-	-	-	-	-	-	-	-	<0.550	-	-	-	-	-	<0.664	<0.828	-	-	-	-	-	-
Xylenes (Total)	-	-	-	-	-	-	-	-	-	-	<0.275	-	-	-	-	-	<0.332	<0.414	-	-	-	-	-	-
4,4'-DDD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	0.0845	<0.0048	<0.0049	<0.0045
4,4'-DDE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0249	0.0173	0.0186	0.0169	0.0165	0.0167
4,4'-DDT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.033	0.0424	0.0447	0.0402	0.0449	0.0393
Aldrin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
alpha-BHC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
alpha-Chlordane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0086	<0.0049	0.0058	0.0097	0.0115	<0.0045
beta-BHC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	0.0066	<0.0048	<0.0049	<0.0045
Chlordane (Total)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0324	<0.0389	<0.0386	<0.0382	<0.0394	<0.0358
delta-BHC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Dieldrin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0204	0.042	0.0298	0.0192	0.0179	0.0132
Endosulfan I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0063	<0.0049	0.0062	0.005	0.0083	<0.0045
Endosulfan II	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0056	0.0059	0.0063	0.0093	0.0074	0.0071
Endosulfan Sulfate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Endrin	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Endrin Ketone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0203	0.0254	<0.0048	<0.0048	0.0196	0.0175
gamma-BHC (Lindane)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0024	<0.0029	<0.0029	<0.0029	<0.0030	<0.0027
gamma-Chlordane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Heptachlor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Heptachlor Epoxide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Hexachlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Methoxychlor	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0040	<0.0049	<0.0048	<0.0048	<0.0049	<0.0045
Toxaphene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.202	<0.243	<0.241	<0.239	<0.246	<0.224
BZ#101	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.218	0.202	0.297	0.283	0.285	0.313
BZ#105	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.133	0.059	0.0663	0.0825	0.0854	0.089
BZ#118	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.185	0.159	0.186	0.211	0.215	0.205
BZ#128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0434	0.0387	0.0447	0.0464	0.0476	0.0446
BZ#138	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.209	0.215	0.269	0.232	0.255	0.268
BZ#153	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.186	0.204	0.289	0.222	0.226	0.214
BZ#170	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.071	0.0628	0.133	0.0474	0.0759	0.0693
BZ#18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0932	0.0731	0.173	0.0982	0.106	0.123
BZ#180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0992	0.143	0.19	0.0957	0.0957	0.089
BZ#183	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0157	0.0304	0.0616	0.0165	0.029	0.0176

DRAFT

TABLE H-8
SEDIMENT ANALYTICAL RESULTS
1 Horizon Way
Everett, Masschusetts

Sample ID: Sample Time: Analyte	GZ-1 0-1ft 10:14	GZ-2 1-2ft 10:08	GZ-3B 0-1ft 09:55	GZ-4 09:20	GZ-5B 7-8ft 09:04	GZ-6 1-2ft 09:15	GZ-7 01-ft 11:47	GZ-8 10:40	GZ-9 1-2ft 12:02	GZ-10 2-3ft 11:02	GZ-11 1-2ft 10:53	GZ-12 1-2ft 12:14	GZ-13 13:20	GZ-14 2-3ft 13:38	GZ-15 14:02	GZ-16 0-1ft 13:29	GZ-17 4-5ft 13:53	GZ-18 5-6ft 14:14	Comp GZ-13 14 16 13:20	Comp GZ-8 10 11 10:40	Comp GZ-15 17 18 13:53	Comp GZ-4 5B 6 09:04	Comp GZ-1 2 3B 09:55	Comp GZ-7 9 12 11:47
BZ#184	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00066	0.00081	0.00213	0.00329	0.00506	0.00324
BZ#187	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0694	0.0848	0.122	0.0461	0.0832	0.049
BZ#195	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.00716	0.0168	0.019	0.00883	0.00981	0.00717
BZ#206	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0141	0.0136	0.0162	0.0123	0.0112	0.00761
BZ#209	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00066	0.00169	0.00141	<0.00077	<0.00080	<0.00073
BZ#28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0839	0.0686	0.126	0.0882	0.114	0.122
BZ#44	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.121	0.112	0.202	0.138	0.153	0.189
BZ#49	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.106	0.0966	0.174	0.123	0.134	0.158
BZ#52	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.156	0.147	0.248	0.188	0.211	0.238
BZ#66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.0958	0.136	0.121	0.137	0.154
BZ#8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0151	0.0163	0.0506	0.0186	0.0304	0.0222
BZ#87	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.107	0.106	0.146	0.138	0.147	0.14
Total PCBs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	1.9	3.0	2.2	2.5	2.5
Total Dioxin Equivalent PCBs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0000095	0.0000065	0.0000076	0.0000088	0.0000090	0.0000088
Total Petroleum Hydrocarbons	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1820	7180	4070	1460	1820	1510
2,4,5-T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.002	<0.002	<0.002	<0.002	<0.002
2,4,5-TP (Silvex)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.003	<0.002	<0.002	0.044	0.069	<0.002
2,4-D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.012	<0.011	<0.011	<0.011	<0.011	<0.012
2,4-DB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.11	0.754	0.443	1.07	0.408	<0.012
Dalapon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.012	<0.010	<0.010	<0.011	0.096	0.167
Dicamba	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.031	<0.002	0.014	0.025	0.028
Dichlorprop	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.139	0.1	0.16	0.338	0.662	0.186
Dinoseb	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.013	<0.011	<0.011	<0.011	0.082	0.032
MCPA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.612	<0.531	<0.531	<0.542	<0.520	<0.570
MCPP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<12.4	<26.8	<10.7	<27.4	<26.3	<23.0
1,1-Biphenyl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
1,2,4-Trichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	1.16	<0.570	<0.587	<0.538
1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	1.67	<0.570	<0.587	<0.538
2,4,5-Trichlorophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2,4,6-Trichlorophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2,4-Dichlorophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2,4-Dimethylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2,4-Dinitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.45	<2.90	<2.89	<2.86	<2.94	<2.70
2,4-Dinitrotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2,6-Dinitrotoluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2-Chloronaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2-Chlorophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2-Methylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2-Methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
2-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
3,3´-Dichlorobenzidine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.977	<1.16	<1.15	<1.14	<1.18	<1.08
3+4-Methylphenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.977	<1.16	<1.15	<1.14	<1.18	<1.08
4-Bromophenyl-phenylether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
4-Chloroaniline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.977	<1.16	<1.15	<1.14	<1.18	<1.08
4-Nitrophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.45	<2.90	<2.89	<2.86	<2.94	<2.70
Acenaphthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Acetophenone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.977	<1.16	<1.15	<1.14	<1.18	<1.08
Aniline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.45	<2.90	<2.89	<2.86	<2.94	<2.70
Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	0.658	<0.570	<0.587	<0.538
Azobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.683	1.13	1.38	0.662	<0.587	0.596
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.959	1.36	2.4	1.18	0.447	0.865
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.59	2.3	4.61	2.24	0.766	1.43
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.535	0.869	1.68	0.818	<0.587	<0.538
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.564	0.942	1.97	0.789	<0.587	0.624
bis(2-Chloroethoxy)methane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
bis(2-Chloroethyl)ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
bis(2-chloroisopropyl)Ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	51	31.9	619	88	46.1	28.7
Butylbenzylphthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	6.55	<0.570	<0.587	<0.538
Chrysene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.804	1.19	1.84	0.856	0.352	0.898
Dibenzo(a,h)Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.245	<0.290	0.398	<0.286	<0.294	<0.270
Dibenzofuran	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Diethylphthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Dimethylphthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Di-n-butylphthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	1.3	<0.570	<0.587	<0.538
Di-n-octylphthalate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.2	1.05	110	12.6	8.4	2.05
Fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.07	2.23	2.47	1.12	0.608	1.2
Fluorene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Hexachlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Hexachlorobutadiene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Hexachloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Indeno(1,2,3-cd)Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.535	0.74	1.38	0.753	<0.587	<0.538
Isophorone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Nitrobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
N-Nitrosodimethylamine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Pentachlorophenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.45	<2.90	<2.89	<2.86	<2.94	<2.70
Phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.607	1.08	2.23	<0.570	<0.587	0.538
Phenol	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.488	<0.579	<0.576	<0.570	<0.587	<0.538
Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.44	3.68	5.64	2.77	0.866	2.4
2-Methylnaphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.122	<0.145	0.709	<0.143	<0.149	0.134
Acenaphthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.122	<0.145	1.88	<0.143	<0.149	<0.134
Acenaphthylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.36	0.295	0.32	0.189	0.256	0.488
Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.365	0.585	2.55	0.2	0.274	0.541

DRAFT

TABLE H-8
SEDIMENT ANALYTICAL RESULTS
1 Horizon Way
Everett, Masschusetts

Sample ID: Sample Time: Analyte	GZ-1 0-1ft 10:14	GZ-2 1-2ft 10:08	GZ-3B 0-1ft 09:55	GZ-4 09:20	GZ-5B 7-8ft 09:04	GZ-6 1-2ft 09:15	GZ-7 01-ft 11:47	GZ-8 10:40	GZ-9 1-2ft 12:02	GZ-10 2-3ft 11:02	GZ-11 1-2ft 10:53	GZ-12 1-2ft 12:14	GZ-13 13:20	GZ-14 2-3ft 13:38	GZ-15 14:02	GZ-16 0-1ft 13:29	GZ-17 4-5ft 13:53	GZ-18 5-6ft 14:14	Comp GZ-13 14 16 13:20	Comp GZ-8 10 11 10:40	Comp GZ-15 17 18 13:53	Comp GZ-4 5B 6 09:04	Comp GZ-1 2 3B 09:55	Comp GZ-7 9 12 11:47
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.822	1.69	4.95	0.464	0.476	1.08
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.07	2.32	4.99	0.71	0.761	1.64
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.67	3.3	7.76	1.17	1.28	2.64
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	1.6	3.46	0.544	0.577	1.17
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71	1.47	2.92	0.475	0.387	0.943
Chrysene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.06	2.31	5.14	0.675	0.743	1.61
Dibenzo(a,h)Anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.219	0.423	1.01	<0.143	0.149	0.327
Fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.55	4.92	11.5	1.13	0.922	1.95
Fluorene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.122	<0.145	1.73	<0.143	<0.149	0.15
Indeno(1,2,3-cd)Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.948	1.8	4.23	0.601	0.595	1.31
Naphthalene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.219	0.174	2.31	0.149	0.291	0.423
Phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.593	1.47	9.7	0.378	0.393	0.959
Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.77	4.67	9.14	1.06	1.34	2.86
Hexavalent Chromium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1.0	<1.3	<1.3	<1.4	<1.2	<1.3
Reactive Cyanide	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
C11-C22 Aromatics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	419	1410	869	271	404	307
C19-C36 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	561	1790	1070	378	507	376
C9-C18 Aliphatics	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	107	270	245	65.1	106	67.7
Arsenic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	79.8	89.7	66.5	282	80.5	66
Barium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	58.5	80.5	72.9	59	55.3	59
Cadmium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.36	3.79	1.25	2.35	2.02	2.09
Chromium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	95.1	91.8	77.5	87.3	90	84.3
Copper	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	368	439	201	328	276	267
Lead	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	414	624	265	353	273	319
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.95	2.21	4.37	2.11	2.37	1.8
Nickel	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	28.9	30.8	16.2	25.5	27	27
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<7.6	<8.7	<9.4	<8.0	<9.2	<8.3
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.73	1.76	2.84	1.69	1.59	1.61
Zinc	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	428	574	221	387	363	380
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ																								
1,2,4-Trimethylbenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.157	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0974	0.663	-	-	-	-	-	-
1.2-Dichlorobenzene	<0.0061	<0.0064	0.0119	0.0144	0.321	0.0148	<0.0057	<0.0052	<0.0084	0.0081	0.451	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	1.79	0.0562	<0.488	<0.579	1.16	<0.57	<0.587	<0.538
1,4-Dichlorobenzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0249	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	0.853	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0111	0.812	<0.488	<0.579	1.67	<0.57	<0.587	<0.538
2-Chlorotoluene	<0.0061	<0.0064	<0.0095	<0.0138	0.57	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0552	0.712	-	-	-	-	-	-
Acetone	0.195	0.246	0.522	0.258	0.407	0.198	0.0882	0.156	0.0911	0.803	1.67	0.0557	0.226	0.0994	0.215	0.127	2.68	0.708	-	-	-	-	-	-
Benzene	<0.0061	<0.0064	<0.0095	<0.0138	0.0394	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	0.0103	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.365	0.1	-	-	-	-	-	-
Carbon Disulfide	0.0091	<0.0064	0.0175	0.0575	0.0283	0.0135	0.0133	<0.0052	0.02	<0.0076	0.0191	<0.0067	0.0173	0.0281	0.0156	0.0224	0.717	0.049	-	-	-	-	-	-
Chlorobenzene	<0.0061	<0.0064	<0.0095	0.0201	<0.0177	<0.008	<0.0057	<0.0052	<0.0084	0.0452	5.6	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.425	10.9	-	-	-	-	-	-
Naphthalene	<0.0061	<0.0064	<0.0095	<0.0138	0.374	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	0.0084	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.0123	2.65	0.219	0.174	2.31	0.149	0.291	0.423
Trichloroethene	<0.0061	<0.0064	<0.0095	<0.0138	<0.0177	<0.008	<0.0057	<0.0052	<0.0084	<0.0076	<0.0078	<0.0067	<0.0077	<0.0069	<0.0105	<0.0066	0.445	<0.0088	-	-	-	-	-	-
Benzo(a)anthracene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.822	1.69	4.95	0.662	0.476	1.08
Benzo(a)pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.07	2.32	4.99	1.18	0.761	1.64
Benzo(b)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.67	3.3	7.76	2.24	1.28	2.64
Benzo(g,h,i)perylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.88	1.6	3.46	0.818	0.577	1.17
Benzo(k)fluoranthene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.71	1.47	2.92	0.789	0.387	0.943
Chrysene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.06	2.31	5.14	0.856	0.743	1.61
Indeno(1,2,3-cd)Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.948	1.8	4.23	0.753	0.595	1.31
Phenanthrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.607	1.47	9.7	0.378	0.393	0.959
Pyrene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.77	4.67	9.14	2.77	1.34	2.86

Notes:
1. Concentrations are presented in units of milligrams per kilogram (mg/kg) or parts per million (ppm) unless otherwise noted.
2. <= less than listed laboratory reporting limits (RLs).
3. "-" = Not analyzed for the compound/parameter.
4. For the composite sediment samples, the revised laboratory results issued on October 3, 2013 are listed in the table.
5. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene.
If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation.
It should be noted that total xylene was reported for certain samples by the laboratory and the total xylene results derived using the above approach might be different from the results reported by the laboratory.
6. The sum of the PCB congener results were used to represent the total PCB results. If no PCB congener was detected, the lowest RL among the congeners was used to represent the RL of total PCBs.
If any PCB congener was detected, the sum of the congener results was used to represent the total PCB result and half RL for the non-detect (if any) was used for the summation.
7. Certain PCB Congeners have been shown to cause "dioxin-like" toxic responses. As a result, 2,3,7,8-TCDD was included as a COC for sediment.
The EPC for 2,3,7,8-TCDD (i.e., total dioxin equivalence) was calculated using the World Health Organization Toxicity Equivalence Factors for mammals presented in the USEPA Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment.
The PCB Congeners 105 and 118 were included in the EPC derivation for 2,3,7,8-TCDD.
Δ. Certain analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result. If the analyte was not detected via any method, the minimum RL is listed as the RL for the nondetected sample result.

The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

PCB = Polychlorinated Biphenyl; EPC = Exposure Point Concentration.

DRAFT

TABLE H-9
SUMMARY OF ANALYTICAL DATA FOR SEDIMENT SAMPLES[1]
1 Horizon Way
Everett, Massachusetts

Constitute [2]	Frequency of Detection[3]	Range Detected[3]	Median Concentration[4]	Arithmetic Mean Concentration[4]	Maximum Detected Concentration Location	Exposure Point Concentration for Human Health Risk Characterization[4,5]
1,3,5-Trimethylbenzene	3 / 18	0.040 - 0.081	0.0039	0.014	GZ-17 4-5ft	0.014
2-Butanone	16 / 18	0.013 - 0.15	0.032	0.044	GZ-10 2-3ft	0.044
4-Chlorotoluene	2 / 18	0.091 - 0.10	0.0039	0.014	GZ-5B 7-8ft	0.014
4-Isopropyltoluene	2 / 18	0.039 - 0.045	0.0039	0.0081	GZ-18 5-6ft	0.0081
cis-1,2-Dichloroethene	1 / 18	0.014 - 0.014	0.0039	0.0047	GZ-17 4-5ft	0.0047
Diethyl Ether	5 / 18	0.0091 - 0.059	0.0040	0.0098	GZ-17 4-5ft	0.0098
Ethylbenzene	4 / 18	0.022 - 0.079	0.0039	0.015	GZ-18 5-6ft	0.015
Isopropylbenzene	2 / 18	0.019 - 0.023	0.0039	0.0060	GZ-17 4-5ft	0.0060
n-Butylbenzene	2 / 18	0.050 - 0.064	0.0039	0.0099	GZ-5B 7-8ft	0.0099
n-Propylbenzene	3 / 18	0.013 - 0.027	0.0039	0.0068	GZ-5B 7-8ft	0.0068
sec-Butylbenzene	3 / 18	0.019 - 0.039	0.0039	0.0076	GZ-17 4-5ft	0.0076
Toluene	4 / 18	0.010 - 0.061	0.0039	0.013	GZ-17 4-5ft	0.013
Xylenes (Total)	3 / 18	0.044 - 0.17	0.0039	0.022	GZ-18 5-6ft	0.022
4,4´-DDD	1 / 6	0.085 - 0.085	0.0024	0.016	Comp GZ-15 17 18	0.016
4,4´-DDE	6 / 6	0.017 - 0.025	0.017	0.018	Comp GZ-13 14 16	0.018
4,4´-DDT	6 / 6	0.033 - 0.045	0.041	0.041	Comp GZ-1 2 3B	0.041
alpha-Chlordane	4 / 6	0.0058 - 0.012	0.0072	0.0067	Comp GZ-1 2 3B	0.0067
beta-BHC	1 / 6	0.0066 - 0.0066	0.0024	0.0030	Comp GZ-15 17 18	0.0030
Dieldrin	6 / 6	0.013 - 0.042	0.020	0.024	Comp GZ-8 10 11	0.024
Endosulfan I	4 / 6	0.0050 - 0.0083	0.0056	0.0051	Comp GZ-1 2 3B	0.0051
Endosulfan II	6 / 6	0.0056 - 0.0093	0.0067	0.0069	Comp GZ-4 5B 6	0.0069
Endrin Ketone	4 / 6	0.018 - 0.025	0.019	0.015	Comp GZ-8 10 11	0.015
Total PCBs	6 / 6	1.9 - 3.0	2.3	2.4	Comp GZ-15 17 18	2.4
Total Dioxin Equivalent PCBs	6 / 6	0 - 0	0	0.0000084	Comp GZ-13 14 16	0.0000084
Total Petroleum Hydrocarbons	6 / 6	1460 - 7180	1820	2977	Comp GZ-8 10 11	NCC
2,4,5-TP (Silvex)	2 / 6	0.044 - 0.069	0.0013	0.020	Comp GZ-1 2 3B	0.020
2,4-DB	5 / 6	0.11 - 1.1	0.43	0.47	Comp GZ-4 5B 6	0.47
Dalapon	2 / 6	0.096 - 0.17	0.0058	0.047	Comp GZ-7 9 12	0.047
Dicamba	4 / 6	0.014 - 0.031	0.020	0.017	Comp GZ-8 10 11	0.017
Dichlorprop	6 / 6	0.100 - 0.66	0.17	0.26	Comp GZ-1 2 3B	0.26
Dinoseb	2 / 6	0.032 - 0.082	0.0060	0.023	Comp GZ-1 2 3B	0.023
bis(2-Ethylhexyl)phthalate	6 / 6	29 - 619	49	144	Comp GZ-15 17 18	144
Butylbenzylphthalate	1 / 6	6.6 - 6.6	0.29	1.3	Comp GZ-15 17 18	1.3
Di-n-butylphthalate	1 / 6	1.3 - 1.3	0.29	0.45	Comp GZ-15 17 18	0.45
Di-n-octylphthalate	6 / 6	1.1 - 110	6.3	23	Comp GZ-15 17 18	23
2-Methylnaphthalene	2 / 6	0.13 - 0.71	0.074	0.19	Comp GZ-15 17 18	0.19
Acenaphthene	1 / 6	1.9 - 1.9	0.072	0.37	Comp GZ-15 17 18	0.37
Acenaphthylene	6 / 6	0.19 - 0.49	0.31	0.32	Comp GZ-7 9 12	0.32
Anthracene	6 / 6	0.20 - 2.6	0.45	0.75	Comp GZ-15 17 18	0.75
Dibenzo(a,h)Anthracene	5 / 6	0.15 - 1.0	0.27	0.37	Comp GZ-15 17 18	0.37
Fluoranthene	6 / 6	0.92 - 12	1.8	3.7	Comp GZ-15 17 18	3.7
Fluorene	2 / 6	0.15 - 1.7	0.074	0.36	Comp GZ-15 17 18	0.36
C11-C22 Aromatics	6 / 6	271 - 1410	412	613	Comp GZ-8 10 11	613
C19-C36 Aliphatics	6 / 6	376 - 1790	534	780	Comp GZ-8 10 11	780
C9-C18 Aliphatics	6 / 6	65 - 270	107	143	Comp GZ-8 10 11	143
Arsenic	6 / 6	66 - 282	80	111	Comp GZ-4 5B 6	111
Barium	6 / 6	55 - 81	59	64	Comp GZ-8 10 11	64
Cadmium	6 / 6	1.3 - 3.8	2.2	2.3	Comp GZ-8 10 11	2.3
Chromium	6 / 6	78 - 95	89	88	Comp GZ-13 14 16	88
Copper	6 / 6	201 - 439	302	313	Comp GZ-8 10 11	313
Lead	6 / 6	265 - 624	336	375	Comp GZ-8 10 11	375
Mercury	6 / 6	1.8 - 4.4	2.2	2.5	Comp GZ-15 17 18	2.5
Nickel	6 / 6	16 - 31	27	26	Comp GZ-8 10 11	26
Silver	6 / 6	1.6 - 2.8	1.7	1.9	Comp GZ-15 17 18	1.9
Zinc	6 / 6	221 - 574	384	392	Comp GZ-8 10 11	392
ANALYTES WITH MULTIPLE ANALYTICAL METHODSΔ						
1,2,4-Trimethylbenzene	3 / 18	0.097 - 0.66	0.0039	0.054	GZ-18 5-6ft	0.054
1,2-Dichlorobenzene	9 / 24	0.0081 - 1.8	0.013	0.22	GZ-17 4-5ft	0.22
1,4-Dichlorobenzene	5 / 24	0.011 - 1.7	0.0050	0.20	Comp GZ-15 17 18	0.20
2-Chlorotoluene	3 / 18	0.055 - 0.71	0.0039	0.078	GZ-18 5-6ft	0.078
Acetone	18 / 18	0.056 - 2.7	0.22	0.49	GZ-17 4-5ft	0.49
Benzene	4 / 18	0.010 - 0.37	0.0039	0.032	GZ-17 4-5ft	0.032
Carbon Disulfide	14 / 18	0.0091 - 0.72	0.017	0.058	GZ-17 4-5ft	0.058
Chlorobenzene	5 / 18	0.020 - 11	0.0041	0.95	GZ-18 5-6ft	0.95
Naphthalene	10 / 24	0.0084 - 2.7	0.0050	0.28	GZ-18 5-6ft	0.28
Trichloroethene	1 / 18	0.45 - 0.45	0.0039	0.029	GZ-17 4-5ft	0.029
Benzo(a)anthracene	6 / 6	0.48 - 5.0	0.95	1.6	Comp GZ-15 17 18	1.6
Benzo(a)pyrene	6 / 6	0.76 - 5.0	1.4	2.0	Comp GZ-15 17 18	2.0
Benzo(b)fluoranthene	6 / 6	1.3 - 7.8	2.4	3.1	Comp GZ-15 17 18	3.1
Benzo(g,h,i)perylene	6 / 6	0.58 - 3.5	1.0	1.4	Comp GZ-15 17 18	1.4
Benzo(k)fluoranthene	6 / 6	0.39 - 2.9	0.87	1.2	Comp GZ-15 17 18	1.2
Chrysene	6 / 6	0.74 - 5.1	1.3	2.0	Comp GZ-15 17 18	2.0
Indeno(1,2,3-cd)Pyrene	6 / 6	0.60 - 4.2	1.1	1.6	Comp GZ-15 17 18	1.6
Phenanthrene	6 / 6	0.38 - 9.7	0.78	2.3	Comp GZ-15 17 18	2.3
Pyrene	6 / 6	1.3 - 9.1	2.8	3.8	Comp GZ-15 17 18	3.8

DRAFT

Notes:
1. All sample results in the Sediment Analytical Results table are included in the statistics.
2. Only analytes detected in one or more sediment samples are listed in this table.
3. These statistics only include analytical results for constituents detected above the laboratory reporting limit (RL).
4. These statistics include all detected constituent concentrations and one-half the RL for constituents not detected above the RL.
5. EPCs for human health risk characterization were based on the arithmetic means of the sediment samples.
6. Concentrations reported in milligrams per kilogram (mg/kg).
7. The sum of the m/p-xylene and o-xylene results were used to represent the total xylene results. If neither was detected, the lowest RL of m/p-xylene and o-xylene was used to represent the RL of total xylene.
   If either was detected, the sum of the m/p-xylene and o-xylene results was used to represent the total xylene result and half RL for the non-detect (if any) was used for the summation.
   It should be noted that total xylene was reported for certain samples by the laboratory and the total xylene results derived using the above approach might be different from the results reported by the laboratory.
8. The sum of the PCB congener results were used to represent the total PCB results. If no PCB congener was detected, the lowest RL among the congeners was used to represent the RL of total PCBs.
   If any PCB congener was detected, the sum of the congener results was used to represent the total PCB result and half RL for the non-detect (if any) was used for the summation.
9. Certain PCB Congeners have been shown to cause "dioxin-like" toxic responses. As a result, 2,3,7,8-TCDD was included as a COC for sediment.
   The EPC for 2,3,7,8-TCDD (i.e., total dioxin equivalence) was calculated using the World Health Organization Toxicity Equivalence Factors for mammals presented in the USEPA Framework for Application of the Toxicity Equivalence Methodology for Polychlorinated Dioxins, Furans, and Biphenyls in Ecological Risk Assessment.
   The PCB Congeners 105 and 118 were included in the EPC derivation for 2,3,7,8-TCDD.

Δ These analytes were analyzed by multiple analytical methods. If the analyte was detected via at least one method, the maximum detected concentration is listed to represent the sample result.
If the analyte was not detected via any analytical method, the minimum RL is listed as the RL for the non-detected sample result.
The other analytes analyzed by multiple analytical methods were not listed under this category. For these analytes, one analytical method provided either the maximum concentration among the methods when the analyte was detected via at least one method, or the mimum RL when the analyte was not detected via any method. The results provided by this analytical method were used to represent the results for the other analytes not listed in this category.

NCC = Not a Constitute of Concern; EPC = Exposure Point Concentration.
COC = Constitute of Concern.

TABLE H-10
SURFACE WATER ANALYTICAL RESULTS
1 Horizon Way
Everett, Massachusetts

Sample ID: Sample Date: Analyte	SW-10-05-22-15 05/22/2015	SW-11-05-22-15 05/22/2015	SW-3-05-21-15 05/21/2015	SW-6-05-21-15 05/21/2015	SWS-3-05-21-15 05/21/2015	SWS-6-05-21-15 05/21/2015	Maximum Detected Concentration
8270C Semi-Volatile Organic Compounds							
1,2,4-Trichlorobenzene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
1,2-Dichlorobenzene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
1,3-Dichlorobenzene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
1,4-Dichlorobenzene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2,4,5-Trichlorophenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2,4,6-Trichlorophenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2,4-Dichlorophenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2,4-Dimethylphenol	<46.7	<51.5	<46.7	<46.7	<46.7	<46.7	ND
2,4-Dinitrophenol	<46.7	<51.5	<46.7	<46.7	<46.7	<46.7	ND
2,4-Dinitrotoluene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2,6-Dinitrotoluene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2-Chloronaphthalene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2-Chlorophenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2-Methylphenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
2-Nitrophenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
3,3′-Dichlorobenzidine	<18.7	<20.6	<18.7	<18.7	<18.7	<18.7	ND
3+4-Methylphenol	<18.7	<20.6	<18.7	<18.7	<18.7	<18.7	ND
4-Bromophenyl-phenylether	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
4-Chloroaniline	<18.7	<20.6	<18.7	<18.7	<18.7	<18.7	ND
4-Nitrophenol	<46.7	<51.5	<46.7	<46.7	<46.7	<46.7	ND
Acetophenone	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Aniline	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Azobenzene	<18.7	<20.6	<18.7	<18.7	<18.7	<18.7	ND
bis(2-Chloroethoxy)methane	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
bis(2-Chloroethyl)ether	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
bis(2-chloroisopropyl)Ether	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
bis(2-Ethylhexyl)phthalate	<5.6	<6.2	<5.6	6	<5.6	<5.6	6
Butylbenzylphthalate	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Dibenzofuran	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Diethylphthalate	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Dimethylphthalate	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Di-n-butylphthalate	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Di-n-octylphthalate	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Hexachlorobutadiene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Hexachloroethane	<4.7	<5.2	<4.7	<4.7	<4.7	<4.7	ND
Isophorone	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Nitrobenzene	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
N-Nitrosodimethylamine	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
Phenol	<9.3	<10.3	<9.3	<9.3	<9.3	<9.3	ND
8270D(SIM) Semi-Volatile Organic Compounds							
2-Methylnaphthalene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	ND
Acenaphthene	<0.19	<0.19	<0.19	<0.19	0.21	<0.19	0.21
Acenaphthylene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	ND
Anthracene	<0.19	<0.19	<0.19	<0.19	0.2	<0.19	0.2
Benzo(a)anthracene	<0.05	<0.05	<0.05	0.14	0.05	<0.05	0.14
Benzo(a)pyrene	<0.05	<0.05	<0.05	0.18	<0.05	<0.05	0.18
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	0.28	0.06	<0.05	0.28
Benzo(g,h,i)perylene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	ND
Benzo(k)fluoranthene	<0.05	<0.05	<0.05	0.1	<0.05	<0.05	0.1
Chrysene	<0.05	<0.05	<0.05	0.2	0.06	<0.05	0.2
Dibenzo(a,h)Anthracene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	ND
Fluoranthene	<0.19	<0.19	<0.19	0.33	0.44	<0.19	0.44
Fluorene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	ND
Hexachlorobenzene	<0.19	<0.19	<0.19	<0.19	<0.19	<0.19	ND
Indeno(1,2,3-cd)Pyrene	<0.05	<0.05	<0.05	0.17	<0.05	<0.05	0.17
Naphthalene	<0.19	<0.19	<0.19	<0.19	0.42	<0.19	0.42
Pentachlorophenol	<0.85	<0.84	<0.84	<0.84	<0.84	<0.84	ND
Phenanthrene	<0.19	<0.19	<0.19	<0.19	0.27	<0.19	0.27
Pyrene	<0.19	<0.19	<0.19	0.28	0.29	<0.19	0.29
Classical Chemistry							
Hexavalent Chromium	<10	<10	<10	<10	<10	<10	ND
Dissolved Metals							
Antimony	<2.5	<2.5	<5.0	<5.0	<5.0	<5.0	ND
Arsenic	6.6	<2.5	18.1	<2.5	348	6.2	348
Barium	<50.0	<25.0	25.1	27.3	<25.0	<25.0	27.3
Beryllium	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND
Cadmium	<2.5	<2.5	<2.5	<2.5	7.6	<2.5	7.6
Chromium	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	ND
Lead	<25.0	<25.0	<10.0	<10.0	<10.0	<10.0	ND
Mercury	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	ND
Nickel	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	ND
Selenium	<5.0	<5.0	<10.0	<10.0	<10.0	<10.0	ND
Silver	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	ND
Thallium	<8.0	<10.0	<3.0	<3.0	<3.0	<4.0	ND
Vanadium	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	ND
Zinc	30.8	<25.0	<25.0	26.6	<25.0	30.9	30.9
MADEP-EPH Extractable Petroleum Hydrocarbons							
C11-C22 Aromatics	<93.5	<94.3	<93.5	<95.2	122	<93.5	122
C19-C36 Aliphatics	<93	<94	<93	134	<93	<93	134
C9-C18 Aliphatics	<93	<94	<93	<95	<93	<93	ND

Notes:
1. Concentrations are reported in micrograms per liter (µg/L; parts per billion).
2. Results indicated as "<" are below the laboratory reporting limit (RL) shown.

ND = Not Detected.

DRAFT

TABLE H-11
SUMMARY OF CONSTITUENTS OF CONCERN
1 Horizon Way
Everett, Massachusetts

DRAFT

CLASS	ANALYTE	SOIL	GROUNDWATER	SEDIMENT	SURFACE WATER
<<< VOC >>>	1,1,1-Trichloroethane	COC	COC	ND	--
	1,1-Dichloroethane	COC	NL	ND	--
	1,2,3-Trichlorobenzene	COC	NL	ND	--
	1,2,4-Trichlorobenzene	COC	NL	ND	ND
	1,2,4-Trimethylbenzene	Note 6	NL	COC	--
	1,2-Dichlorobenzene	COC	NL	COC	ND
	1,2-Dichloroethane	COC	NL	ND	--
	1,3,5-Trimethylbenzene	Note 6	NL	COC	--
	1,3-Dichlorobenzene	COC	NL	ND	ND
	1,4-Dichlorobenzene	COC	NL	COC	ND
	2-Butanone	COC	NL	COC	--
	2-Chlorotoluene	COC	NL	COC	--
	4-Chlorotoluene	ND	NL	COC	--
	Acetone	COC	COC	COC	--
	Benzene	COC	COC	COC	--
	Carbon Disulfide	COC	COC	COC	--
	Chlorobenzene	COC	NL	COC	--
	Chloroform	COC	NL	ND	--
	cis-1,2-Dichloroethene	COC	NL	COC	--
	Diethylether	COC	NL	COC	--
	Ethylbenzene	COC	COC	COC	--
	Isopropylbenzene	Note 6	NL	COC	--
	Methylene Chloride	COC	NL	ND	--
	Methyl-Tert-Butyl-Ether	ND	COC	ND	--
	Naphthalene	COC	COC	COC	COC
	n-Butylbenzene	Note 6	NL	COC	--
	n-Propylbenzene	Note 6	NL	COC	--
	p-Isopropyltoluene	Note 6	NL	COC	--
	sec-Butylbenzene	Note 6	NL	COC	--
	Tetrachloroethene	COC	NL	ND	--
	Toluene	COC	COC	COC	--
	Trichloroethene	COC	NL	COC	--
	Vinyl Chloride	COC	NL	ND	--
	Xylene (Total)	COC	COC	COC	--
	Styrene	COC	NL	ND	--
	1,2-Dichloropropane	COC	NL	ND	--
	1,2,3-Trichloropropane	COC	NL	ND	--
<<< SVOC >>>	1,4-Dioxane	COC	NL	ND	--
	2,4-Dimethylphenol	COC	NL	ND	ND
	1-Methylnaphthalene	COC	COC	--	--
	2-Methylnaphthalene	COC	COC	COC	ND
	2-Methylphenol	COC	NL	ND	ND
	4-Methylphenol	COC	COC	ND	ND
	Acenaphthene	COC	COC	COC	COC
	Acenaphthylene	COC	COC	COC	ND
	Anthracene	COC	COC	COC	COC
	Benzo(a)Anthracene	COC	COC	COC	COC
	Benzo(a)Pyrene	COC	COC	COC	COC
	Benzo(e)Pyrene	COC	NL	--	--
	Benzo(b)Fluoranthene	COC	COC	COC	COC
	Benzo(g,h,i)Perylene	COC	COC	COC	ND
	Benzo(k)Fluoranthene	COC	COC	COC	COC
	Bis(2-Ethylhexyl)phthalate	COC	NL	COC	COC
	Butylbenzylphthalate	COC	NL	COC	ND
	Chrysene	COC	COC	COC	COC
	Dibenzo(a,h)anthracene	COC	COC	COC	ND
	Dibenzofuran	COC	COC	ND	ND
	Di-n-butylphthalate	COC	NL	COC	ND
	Di-n-octylphthalate	ND	NL	COC	ND
	Fluoranthene	COC	COC	COC	COC
	Fluorene	COC	COC	COC	ND
	Indeno(1,2,3-cd)Pyrene	COC	COC	COC	COC
	Phenanthrene	COC	COC	COC	COC
	Phenol	COC	COC	ND	ND
	Pyrene	COC	COC	COC	COC
	bis(2-Chloroethoxy)methane	COC	NL	ND	ND
	Pentachlorophenol	COC	NL	ND	ND
	3,3-Dichlorobenzidine	COC	NL	ND	ND
<<< TPH >>>	C11-C22 Aromatic Fraction	COC	COC	COC	COC
	C19-C36 Aliphatic Fraction	COC	COC	COC	COC
	C5-C8 Aliphatic Fraction	COC	COC	--	--
	C9-C10 Aromatic Fraction	COC	COC	--	--
	C9-C18 Aliphatic Fraction	COC	COC	COC	ND
<<< Pesticide >>>	4,4'-DDD	COC	ND (Pesticides)	COC	--
	4,4'-DDE	COC	ND (Pesticides)	COC	--
	4,4'-DDT	COC	ND (Pesticides)	COC	--
	alpha-BHC	COC	ND (Pesticides)	ND	--
	alpha-Chlordane	ND (Pesticides)	ND (Pesticides)	COC	--
	beta-BHC	COC	ND (Pesticides)	COC	--
	Dieldrin	COC	ND (Pesticides)	COC	--
	Endosulfan I	ND	ND (Pesticides)	COC	--
	Endosulfan II	ND	ND (Pesticides)	COC	--
	Endrin Ketone	COC	ND (Pesticides)	COC	--

TABLE H-11
SUMMARY OF CONSTITUENTS OF CONCERN
1 Horizon Way
Everett, Massachusetts

CLASS	ANALYTE	SOIL	GROUNDWATER	SEDIMENT	SURFACE WATER
	gamma-BHC	COC	ND (Pesticides)	ND	--
	Heptachlor Epoxide	COC	ND (Pesticides)	ND	--
	Hexachlorobenzene	COC	ND (Pesticides)	ND	--
	Methoxychlor	COC	ND (Pesticides)	ND	--
<<< herbicide >>>	2,4-DB (2,4-D Butyric Acid)	ND	ND (Herbicides)	COC	--
	2,4-D	COC	ND (Herbicides)	ND	--
	2,4,5-T	COC	ND (Herbicides)	ND	--
	Dicamba	COC	ND (Herbicides)	COC	--
	2,4,5-TP/Silvex	ND	ND (Herbicides)	COC	--
	Dalapon	ND	ND (Herbicides)	COC	--
	Dichlorprop	ND	ND (Herbicides)	COC	--
	Dinoseb	ND	ND (Herbicides)	COC	--
<<< PCB >>>	Polychlorinated Biphenyls	Note 7	ND (PCBs)	COC	--
	Aroclor - 1242	COC	ND (PCBs)	--	--
	Aroclor - 1248	COC	ND (PCBs)	--	--
	Aroclor - 1254	COC	ND (PCBs)	--	--
	Aroclor - 1260	COC	ND (PCBs)	--	--
	Aroclor - 1262	COC	ND (PCBs)	--	--
	Aroclor - 1268	COC	ND (PCBs)	--	--
<<< dioxin >>>	2,3,7,8-TCDD	--	--	COC	--
<<< Inorganics >>>	Antimony	COC	COC	--	ND
	Arsenic	COC	COC	COC	COC
	Barium	COC	COC	COC	COC
	Beryllium	COC	COC	--	ND
	Cadmium	COC	COC	COC	COC
	Chromium (total)	COC	COC	Note 8	ND
	Chromium (III)	--	--	COC	--
	Copper	COC	COC	COC	--
	Cyanide	COC	COC	ND	--
	Iron	COC	NL	--	--
	Lead	COC	COC	COC	ND
	Mercury	COC	COC	COC	ND
	Nickel	COC	COC	COC	ND
	Selenium	COC	COC	ND	ND
	Silver	COC	ND	COC	ND
	Thallium	COC	COC	--	ND
	Vanadium	COC	COC	--	ND
	Zinc	COC	COC	COC	COC

DRAFT

Notes:
1. Only analytes detected in at least one soil, groundwater, sediment, or surface water sample were evaluated as potential constituents of concern.
2. o-Xylenes and m&p-xylenes were evaluated as xylene (total).
3. All COCs detected in soil were evaluated as COCs in soil-borne fugitive dust, while all groundwater COCs considered "volatile" in accordance with the USEPA (2015) guidelines were evaluated as COCs in ambient air in a trench.
4. Reasons for exclusion as a COC:
    - ND = Analyte not detected in this medium in samples being evaluated as part of this assessment
    - -- = Analyte was not analyzed for this medium
    - NL = Analyte was not listed in the Analytical Results Table
5. The C9-C12 aliphatic hydrocarbon fraction was evaluated as part of the C9-C18 aliphatic fraction because concentrations of constituents in the C9-C12 aliphatic range are included in the C9-C18 aliphatic range.
6. Multiple VOCs such as 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 4-isopropyltoluene, isopropylbenzene, n-butylbenzene, sec-butylbenzene, and n-propylbenzene were included as part of the C9-C10 Aromatic Fraction and not evaluated separately.
7. Risks associated with exposure to PCBs in soil were evaluated for each detected PCB aroclor.
8. Hexavalent chromium was not detected in any sediment samples; as a result, the trivalent chromium was identified as a sediment COC and the total chromium data were used to derive the sediment EPC for the trivalent chromium.
9. No sediment samples were analyzed for dioxin. Certain PCBs have been shown to cause "dioxin-like" toxic responses. As a result, 2,3,7,8-TCDD was included as a sediment COC.

Abbreviations:
COC = constituents of concern; VOC = volatile organic compound; SVOC = semi-volatile organic compound;
TPH = total petroleum hydrocarbon; PCB = polychlorinated biphenyl.

TABLE H-12
SUMMARY OF EXPOSURE POINT CONCENTRATIONS
1 Horizon Way
Everett, Massachusetts

COC	EPC1 Arithmetic Mean Concentration in Soil[a] (mg/kg)	EPC2 Estimated Concentration in Fugitive Dust[b] (mg/m^3)	EPC4 Arithmetic Mean Concentration in Groundwater[c] (µg/L)	EPC6 Estimated Concentration in Ambient Air[d] (mg/m^3)	EPC7 Arithmetic Mean Concentration in Sediment[e] (mg/kg)	EPC8 Maximum Detected Concentration in Surface Water[f] (µg/L)
1,1,1-Trichloroethane	0.0036	2.17E-10	1.5	1.6E-05	NCC	NCC
1,1-Dichloroethane	0.0036	2.17E-10	NCC	NC	NCC	NCC
1,2,3-Trichlorobenzene	0.031	1.87E-09	NCC	NC	NCC	NCC
1,2,4-Trichlorobenzene	0.33	1.97E-08	NCC	NC	NCC	NCC
1,2,4-Trimethylbenzene	NCC	NC	NCC	NC	5.4E-02	NCC
1,2-Dichlorobenzene	0.0095	5.72E-10	NCC	NC	2.2E-01	NCC
1,2-Dichloroethane	0.011	6.72E-10	NCC	NC	NCC	NCC
1,3,5-Trimethylbenzene	NCC	NC	NCC	NC	1.4E-02	NCC
1,3-Dichlorobenzene	0.0096	5.74E-10	NCC	NC	NCC	NCC
1,4-Dichlorobenzene	0.011	6.40E-10	NCC	NC	2.0E-01	NCC
2-Butanone	0.030	1.79E-09	NCC	NC	4.4E-02	NCC
2-Chlorotoluene	0.0032	1.94E-10	NCC	NC	7.8E-02	NCC
4-Chlorotoluene	NCC	NC	NCC	NC	1.4E-02	NCC
Acetone	0.090	5.38E-09	14	3.3E-05	4.9E-01	NCC
Benzene	0.0092	5.53E-10	3.4	4.8E-05	3.2E-02	NCC
Carbon Disulfide	0.026	1.54E-09	12	1.8E-04	5.8E-02	NCC
Chlorobenzene	0.0032	1.94E-10	NCC	NC	9.5E-01	NCC
Chloroform	0.0064	3.83E-10	NCC	NC	NCC	NCC
cis-1,2-Dichloroethene	0.0042	2.54E-10	NCC	NC	4.7E-03	NCC
Diethylether	0.0034	2.06E-10	NCC	NC	9.8E-03	NCC
Ethylbenzene	0.018	1.06E-09	4.0	5.0E-05	1.5E-02	NCC
Isopropylbenzene	NCC	NC	NCC	NC	6.0E-03	NCC
Methylene Chloride	0.017	9.94E-10	NCC	NC	NCC	NCC
Methyl-Tert-Butyl-Ether	NCC	NC	1.1	1.1E-05	NCC	NCC
Naphthalene	0.87	5.22E-08	8.2	6.1E-05	2.8E-01	4.2E-01
n-Butylbenzene	NCC	NC	NCC	NC	9.9E-03	NCC
n-Propylbenzene	NCC	NC	NCC	NC	6.8E-03	NCC
p-Isopropyltoluene	NCC	NC	NCC	NC	8.1E-03	NCC
sec-Butylbenzene	NCC	NC	NCC	NC	7.6E-03	NCC
Tetrachloroethene	0.0032	1.95E-10	NCC	NC	NCC	NCC
Toluene	0.016	9.32E-10	3.5	4.6E-05	1.3E-02	NCC
Trichloroethene	0.011	6.88E-10	NCC	NC	2.9E-02	NCC
Vinyl Chloride	0.0059	3.53E-10	NCC	NC	NCC	NCC
Xylene (Total)	0.038	2.26E-09	5.2	6.4E-05	2.2E-02	NCC
Styrene	0.0043	2.59E-10	NCC	NC	NCC	NCC
1,2-Dichloropropane	0.0033	2.01E-10	NCC	NC	NCC	NCC
1,2,3-Trichloropropane	0.0032	1.95E-10	NCC	NC	NCC	NCC
1,4-Dioxane	0.12	6.98E-09	NCC	NC	NCC	NCC
2,4-Dimethylphenol	0.67	4.00E-08	NCC	NC	NCC	NCC
1-Methylnaphthalene	2.6	1.58E-07	9.3	6.8E-05	NCC	NCC
2-Methylnaphthalene	0.96	5.77E-08	1.9	1.4E-05	1.9E-01	NCC
2-Methylphenol	0.66	3.97E-08	NCC	NC	NCC	NCC
4-Methylphenol	1.5	9.21E-08	9.5	NC	NCC	NCC
Acenaphthene	1.2	7.16E-08	2.3	1.0E-05	3.7E-01	2.1E-01
Acenaphthylene	0.78	4.69E-08	0.53	1.7E-06	3.2E-01	NCC
Anthracene	1.9	1.15E-07	1.0	1.8E-06	7.5E-01	2.0E-01
Benzo(a)Anthracene	2.6	1.54E-07	0.91	3.6E-07	1.6E+00	1.4E-01
Benzo(a)Pyrene	1.9	1.13E-07	0.83	NC	2.0E+00	1.8E-01
Benzo(e)Pyrene	2.8	1.66E-07	NCC	NC	NCC	NCC
Benzo(b)Fluoranthene	2.3	1.38E-07	0.87	NC	3.1E+00	2.8E-01

DRAFT

TABLE H-12
SUMMARY OF EXPOSURE POINT CONCENTRATIONS
1 Horizon Way
Everett, Massachusetts

COC	EPC1 Arithmetic Mean Concentration in Soil[a] (mg/kg)	EPC2 Estimated Concentration in Fugitive Dust[b] (mg/m³)	EPC4 Arithmetic Mean Concentration in Groundwater[c] (µg/L)	EPC6 Estimated Concentration in Ambient Air[d] (mg/m³)	EPC7 Arithmetic Mean Concentration in Sediment[e] (mg/kg)	EPC8 Maximum Detected Concentration in Surface Water[f] (µg/L)
Benzo(g,h,i)Perylene	1.1	6.35E-08	0.63	NC	1.4E+00	NCC
Benzo(k)Fluoranthene	1.5	9.09E-08	0.85	NC	1.2E+00	1.0E-01
Bis(2-Ethylhexyl)phthalate	717	4.30E-05	NCC	NC	1.4E+02	6.0E+00
Butylbenzylphthalate	0.68	4.09E-08	NCC	NC	1.3E+00	NCC
Chrysene	2.2	1.31E-07	0.94	NC	2.0E+00	2.0E-01
Dibenzo(a,h)anthracene	0.54	3.26E-08	0.58	NC	3.7E-01	NCC
Dibenzofuran	1.0	6.15E-08	1.6	7.5E-07	NCC	NCC
Di-n-butylphthalate	0.66	3.98E-08	NCC	NC	4.5E-01	NCC
Di-n-octylphthalate	NCC	NC	NCC	NC	2.3E+01	NCC
Fluoranthene	5.4	3.24E-07	1.3	NC	3.7E+00	4.4E-01
Fluorene	1.3	7.92E-08	1.3	3.7E-06	3.6E-01	NCC
Indeno(1,2,3-cd)Pyrene	1.1	6.57E-08	0.61	NC	1.6E+00	1.7E-01
Phenanthrene	5.3	3.18E-07	2.0	2.8E-06	2.3E+00	2.7E-01
Phenol	0.99	5.95E-08	2.9	NC	NCC	NCC
Pyrene	4.2	2.54E-07	1.1	4.6E-07	3.8E+00	2.9E-01
bis(2-Chloroethoxy)methane	0.67	4.02E-08	NCC	NC	NCC	NCC
Pentachlorophenol	2.7	1.62E-07	NCC	NC	NCC	NCC
3,3-Dichlorobenzidine	1.3	7.87E-08	NCC	NC	NCC	NCC
C11-C22 Aromatic Fraction	454	2.73E-05	104	8.3E-04	6.1E+02	#N/A
C19-C36 Aliphatic Fraction	665	3.99E-05	164	NC	7.8E+02	#N/A
C5-C8 Aliphatic Fraction	11	6.61E-07	76	1.0E-03	NCC	NCC
C9-C10 Aromatic Fraction	26	1.54E-06	250	2.9E-03	NCC	NCC
C9-C18 Aliphatic Fraction	68	4.05E-06	399	4.0E-03	1.4E+02	NCC
4,4'-DDD	0.0045	2.72E-10	NCC	NC	1.6E-02	NCC
4,4'-DDE	0.0052	3.13E-10	NCC	NC	1.8E-02	NCC
4,4'-DDT	0.016	9.68E-10	NCC	NC	4.1E-02	NCC
alpha-BHC	0.0045	2.69E-10	NCC	NC	NCC	NCC
alpha-Chlordane	NCC	NC	NCC	NC	6.7E-03	NCC
beta-BHC	0.0045	2.69E-10	NCC	NC	3.0E-03	NCC
Dieldrin	0.013	7.66E-10	NCC	NC	2.4E-02	NCC
Endosulfan I	NCC	NC	NCC	NC	5.1E-03	NCC
Endosulfan II	NCC	NC	NCC	NC	6.9E-03	NCC
Endrin Ketone	0.0046	2.76E-10	NCC	NC	1.5E-02	NCC
gamma-BHC	0.0045	2.69E-10	NCC	NC	NCC	NCC
Heptachlor Epoxide	0.0065	3.91E-10	NCC	NC	NCC	NCC
Hexachlorobenzene	0.0047	2.83E-10	NCC	NC	NCC	NCC
Methoxychlor	0.0064	3.82E-10	NCC	NC	NCC	NCC
2,4-DB (2,4-D Butyric Acid)	NCC	NC	NCC	NC	4.7E-01	NCC
2,4-D	0.14	8.32E-09	NCC	NC	NCC	NCC
2,4,5-T	0.058	3.51E-09	NCC	NC	NCC	NCC
Dicamba	0.068	4.11E-09	NCC	NC	1.7E-02	NCC
2,4,5-TP/Silvex	NCC	NC	NCC	NC	2.0E-02	NCC
Dalapon	NCC	NC	NCC	NC	4.7E-02	NCC
Dichlorprop	NCC	NC	NCC	NC	2.6E-01	NCC
Dinoseb	NCC	NC	NCC	NC	2.3E-02	NCC
Polychlorinated Biphenyls	NCC	NC	NCC	NC	2.4E+00	NCC
Aroclor - 1242	0.24	1.43E-08	NCC	NC	NCC	NCC
Aroclor - 1248	0.23	1.37E-08	NCC	NC	NCC	NCC
Aroclor - 1254	0.57	3.41E-08	NCC	NC	NCC	NCC
Aroclor - 1260	3.3	1.99E-07	NCC	NC	NCC	NCC
Aroclor - 1262	0.22	1.32E-08	NCC	NC	NCC	NCC

DRAFT

TABLE H-12
SUMMARY OF EXPOSURE POINT CONCENTRATIONS
1 Horizon Way
Everett, Massachusetts

COC	EPC1 Arithmetic Mean Concentration in Soil[a] (mg/kg)	EPC2 Estimated Concentration in Fugitive Dust[b] (mg/m³)	EPC4 Arithmetic Mean Concentration in Groundwater[c] (µg/L)	EPC6 Estimated Concentration in Ambient Air[d] (mg/m³)	EPC7 Arithmetic Mean Concentration in Sediment[e] (mg/kg)	EPC8 Maximum Detected Concentration in Surface Water[f] (µg/L)
Aroclor - 1268	0.21	1.28E-08	NCC	NC	NCC	NCC
2,3,7,8-TCDD	NCC	NC	NCC	NC	8.4E-06	NCC
Antimony	5.0	2.98E-07	3.5	NC	NCC	NCC
Arsenic	53	3.19E-06	671	NC	1.1E+02	3.5E+02
Barium	74	4.44E-06	46	NC	6.4E+01	2.7E+01
Beryllium	0.24	1.45E-08	2.7	NC	NCC	NCC
Cadmium	1.8	1.09E-07	5.9	NC	2.3E+00	7.6E+00
Chromium (total)	27	1.63E-06	7.5	NC	NCC	NCC
Chromium (III)	NCC	NC	NCC	NC	8.8E+01	NCC
Copper	1010	6.06E-05	45	NC	3.1E+02	NCC
Cyanide	1.3	7.80E-08	32	8.0E-04	NCC	NCC
Iron	81800	4.91E-03	NCC	NC	NCC	NCC
Lead	773	4.64E-05	50	NC	3.7E+02	NCC
Mercury	2.7	1.64E-07	0.14	NC	2.5E+00	NCC
Nickel	23	1.37E-06	35	NC	2.6E+01	NCC
Selenium	9.8	5.87E-07	5.7	NC	NCC	NCC
Silver	1.7	9.96E-08	NCC	NC	1.9E+00	NCC
Thallium	3.1	1.88E-07	2.6	NC	NCC	NCC
Vanadium	48	2.90E-06	64	NC	NCC	NCC
Zinc	249	1.49E-05	224	NC	3.9E+02	3.1E+01

DRAFT

Notes:

a. The soil exposure point concentration is based on the arithmetic mean concentration from all soil samples associated with soil being removed during the Release Abatement Measure (RAM).

For copper, iron, and cyanide, the maximum detected concentrations were used as the EPCs due to the relatively small sample size.

b. The soil-borne fugitive dust exposure point concentrations were estimated from the soil exposure point concentration according to the following equation:

$$EPC_{dust} = EPC_{soil} * PM_{10} * C1$$

EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	Calculated	modeled from soil concentrations
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	Calculated	average concentrations used
[1] PM_{10}	Respirable Particle Concentration - Construction Workers	mg/m^3	0.06	MADEP, 1995; heavy excavation scenario
C1	Unit Conversion Factor	kg/mg	1E-06	Constant

c. The groundwater exposure point concentration is based on the arithmetic mean concentration among all wells representative of the Site conditions for the RAM work.

For carbon disulfide, acenaphthylene, benzo(a)pyrene, and benzo(k)fluoranthene, the maximum detected concentrations were used as the EPCs due to the elevated laboratory reporting limits for certain non-detects.

d. The ambient air exposure point concentrations were modeled from groundwater using a box model presented in TABLE II-1.

e. The sediment exposure point concentration is based on the arithmetic mean concentration from all sediment samples associated with sediment being removed during the Release Abatement Measure (RAM).

f. The surface water exposure point concentration is based on the maximum detected surface water concentration at the Site.

Abbreviations:

COC = constituent of concern.

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE

1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

EXPOSURE PATHWAY: Dermal Contact with Soil

$$ADD_{soil\text{-}dermal} = \frac{EPC_{soil} * DCR_{soil} * EF * ED * EP * RAF_{dermal\text{-}nc} * C1}{BW * AP_{nc}} \quad \text{Equation 1}$$

$$LADD_{soil\text{-}dermal} = \frac{EPC_{soil} * DCR_{soil} * EF * ED * EP * RAF_{dermal\text{-}c} * C1}{BW * AP_{c}} \quad \text{Equation 2}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{soil\text{-}dermal}$	Average Daily Dose	mg/kg-day	Calculated	Equation 1
$LADD_{soil\text{-}dermal}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 2
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	TABLE H-12	See Text
DCR_{soil}	Soil Dermal Contact Rate	mg/day	995	MassDEP 2002, Note A
EF	Exposure Frequency	events/year	260	Five days per week for an entire year
ED	Exposure Duration	days/event	1	MassDEP, 1995
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{dermal}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C1	conversion factor for units	kg/mg	1E-06	Constant
BW	Body Weight of Receptor	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:

A. The soil dermal contact rate (DCR_{soil}) was based on the median skin surface area for hands, forearms, face, and feet for adults multiplied by the adherence factor specific to the body part. Skin surface areas and adherence factor values are based on MassDEP recommendations for Utility/Heavy Construction Workers (MassDEP Technical Update, April 2002).

Adult Female (ages 18-25)

Body Part	SA (cm^2/day)	AF (mg/cm^2)	DCR_{soil} (mg/day)
Hands:	817	0.3487	285
Forearms:	1,150	0.3279	377
Face:	370	0.1102	41
Feet:	1,140	0.2563	292
		Total DCR_{soil}:	**995**

B. The exposure frequency is prorated to a six-month exposure period, or 130 events per 6 months. EP = 0.5 years (6 months)

Abbreviations:

AF = Adherence Factor; MassDEP = Massachusetts Department of Environmental Protection; SA = Skin Surface Area.

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

EXPOSURE PATHWAY: Incidental Ingestion of Soil

$$ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{nc}} \quad \text{Equation 3}$$

$$LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{c}} \quad \text{Equation 4}$$

			Receptor-Specific Values	
Parameter	**Definition**	**Units**	**(ages >18 years)**	**Rationale/Reference**
$ADD_{soil\text{-}oral}$	Average Daily Dose	mg/kg-day	Calculated	Equation 3
$LADD_{soil\text{-}oral}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 4
EPC_{soil}	Exposure Point Concentration in Soil	mg/kg	TABLE H-12	See Text
IR_{soil}	Soil Ingestion Rate	mg/day	100	Activity-weighted ingestion rate; MassDEP 2002 (Note A)
EF	Exposure Frequency	events/year	260	Five days per week for an entire year
ED	Exposure Duration	days/event	1	MassDEP, 1995
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{oral}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C1	conversion factor for units	kg/mg	1E-06	Constant
BW	Body Weight of Receptor	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:

A. The soil ingestion rate is based on MassDEP's recommended ingestion rate of 100 mg/day (Technical Update, April 2002) for receptors involved in heavy excavation.

B. The exposure frequency is prorated to a six month exposure period, or 130 events per 6 months. EP = 0.5 years (6 months)

Abbreviation:
MassDEP = Massachusetts Department of Environmental Protection

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

EXPOSURE PATHWAY: Inhalation of Soil-borne Fugitive Dust and Absorbtion via the Gastointestinal (GI) Tract

$$ADD_{dust-GI} = \frac{EPC_{dust} * 1.5 * INH * RAF_{oral} * EF * ED * EP * C2 * C3}{BW * AP_{nc}} \quad \text{Equation 5}$$

$$LADD_{dust-GI} = \frac{EPC_{dust} * 1.5 * INH * RAF_{oral} * EF * ED * EP * C2 * C3}{BW * AP_{c}} \quad \text{Equation 6}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{dust-GI}$	Average Daily Exposure	mg/kg-day	Calculated	Equation 5
$LADD_{dust-GI}$	Lifetime Average Daily Exposure	mg/kg-day	Calculated	Equation 6
EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	TABLE H-12	modeled from soil concentrations using PM_{10} (Note A)
INH	Inhalation Rate	l/min	60	MassDEP Technical Update, 2008
RAF_{oral}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
EF	Exposure Frequency	events/year	260	Five days per week for an entire year
ED	Exposure Duration	hours/event	8	Typical workday
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
C2	conversion factor for units	m^3/L	1E-03	Constant
C3	conversion factor for units	min/hr	60	Constant
BW	Body Weight of Receptor	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_c	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:

A. A PM_{10} concentration of 0.060 mg/m^3 (excavation scenario, MassDEP, 1995) was applied to soil EPCs to calculate EPC_{dust}. See text for equation used to derive EPC_{dust}.

B. Multiplier 1.5 is based on MassDEP's assumptions: (a) 100% of respirable particulate (RP) is PM_{30}; (b) 50% of RP is PM_{10}; and (c) 50% of PM_{10} and 100% of inhaled particulates other than PM_{10} are swallowed (MassDEP 2008).

C. Inhalation Rate, 60 l/min is ventilation rate for heavy exertion (Appendix B, MassDEP 1995).

Abbreviations:

PM_{10} (PM_{30}) = Particulates in air less than or equal to 10 (30) microns in diameter.
RP = Respirable Particle Concentration.
MassDEP = Massachusetts Department of Environmental Protection

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

EXPOSURE PATHWAY: Inhalation of Soil-borne Fugitive Dust and Respiratory Absorption

$$ADE_{dust\text{-}RA} = \frac{EPC_{dust} * 0.5 * EF * ED * EP * C4}{AP_{nc}} \quad \text{Equation 7}$$

$$LADE_{dust\text{-}RA} = \frac{EPC_{dust} * 0.5 * EF * ED * EP * C4 * C5}{AP_{c}} \quad \text{Equation 8}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADE_{dust\text{-}RA}$	Average Daily Exposure	mg/m^3	Calculated	Equation 7
$LADE_{dust\text{-}RA}$	Lifetime Average Daily Exposure	$\mu g/m^3$	Calculated	Equation 8
EPC_{dust}	Exposure Point Concentration in Fugitive Dust	mg/m^3	TABLE H-12	modeled from soil concentrations using PM_{10} (Note A)
EF	Exposure Frequency	events/year	260	MassDEP, 1995
ED	Exposure Duration	hours/event	8	Typical workday
EP	Exposure Period	years	0.5	Constant
C4	conversion factor for units	days/hr	0.0417	Constant
C5	conversion factor for units	µg/mg	1,000	Constant
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:

A. A respirable particle concentration (RP) of 0.060 mg/m^3 (excavation scenario PM_{10} from MassDEP, 1995) was applied to soil EPCs to calculate EPC_{dust}. See text for equation used to derive EPC_{dust}.

B. Multiplier 0.5 is based on MassDEP's assumption that 50% of PM_{10} enters the lung (MassDEP 2008).

Abbreviation:
MassDEP = Massachusetts Department of Environmental Protection

DRAFT

TABLE H-13

CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

EXPOSURE PATHWAY: Dermal Contact with Groundwater

$$ADD_{gw\text{-}dermal} = \frac{EPC_{gw} * SA * K_p * EF * ED * EP * RAF_{dermal} * C6 * C7}{BW * AP_{nc}} \quad \text{Equation 9}$$

$$LADD_{gw\text{-}dermal} = \frac{EPC_{gw} * SA * K_p * EF * ED * EP * RAF_{dermal} * C6 * C7}{BW * AP_{c}} \quad \text{Equation 10}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{gw\text{-}dermal}$	Average Daily Dose	mg/kg-day	Calculated	Equation 9
$LADD_{gw\text{-}dermal}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 10
EPC_{gw}	Exposure Point Concentration in Groundwater	µg/L	TABLE H-12	See Text
SA	Skin Surface Area	cm^2	3,107	Average for females within the age group including forearms, hands, and feet; MassDEP, 2002
K_p	Permeability Constant	cm/hr	Constituent-specific	TABLE H-15
EF	Exposure Frequency	events/year	104	Two days per week (Note A)
ED	Exposure Duration	hours/event	0.25	Assumed time for set-up and dismantling equipment
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{dermal}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C6	conversion factor for units	L/cm^3	0.001	Constant
C7	conversion factor for units	mg/µg	0.001	Constant
BW	Body Weight	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_c	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Note:

A. The exposure frequency is prorated to a six-month exposure period, or 52 events per 6 months for setup and dismantling of dewatering equipment. EP = 0.5 years (6 months)

Abbreviation:

MassDEP = Massachusetts Department of Environmental Protection

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Exposure (ADE) and Lifetime Average Daily Exposure (LADE)

EXPOSURE PATHWAY: Inhalation of Vapors in Ambient Air

$$ADE_{amb\text{-}air} = \frac{EPC_{air} * EF * ED * EP * C4}{AP_{nc}} \qquad \text{Equation 11}$$

$$LADE_{amb\text{-}air} = \frac{EPC_{air} * EF * ED * EP * C4 * C5}{AP_{c}} \qquad \text{Equation 12}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADE_{amb\text{-}air}$	Average Daily Exposure	mg/m³	Calculated	Equation 11
$LADE_{amb\text{-}air}$	Lifetime Average Daily Exposure	µg/m³	Calculated	Equation 12
EPC_{air}	Exposure Point Concentration in Air	mg/m³	TABLE H-12	See Text
EF	Exposure Frequency	events/year	260	MassDEP, 1995
ED	Exposure Duration	hours/event	8	Typical workday
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
C4	conversion factor for units	days/hr	0.0417	Constant
C5	conversion factor for units	µg/mg	1,000	Constant
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Abbreviation:
MassDEP = Massachusetts Department of Environmental Protection.

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

EXPOSURE PATHWAY: Dermal Contact with Sediment

$$ADD_{sed\text{-}dermal} = \frac{EPC_{sed} * DCR_{sed} * EF * ED * EP * RAF_{dermal\text{-}nc} * C1}{BW * AP_{nc}} \quad \text{Equation 13}$$

$$LADD_{sed\text{-}dermal} = \frac{EPC_{sed} * DCR_{sed} * EF * ED * EP * RAF_{dermal\text{-}c} * C1}{BW * AP_{c}} \quad \text{Equation 14}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{sed\text{-}dermal}$	Average Daily Dose	mg/kg-day	Calculated	Equation 13
$LADD_{sed\text{-}dermal}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 14
EPC_{sed}	Exposure Point Concentration in Sediment	mg/kg	TABLE H-12	See Text
DCR_{sed}	Sediment Dermal Contact Rate	mg/day	3,107	Average skin surface area for adult females (ages 18-25) including forearms, hands, and feet; MADEP, 1995
EF	Exposure Frequency	events/year	260	Five days per week for an entire year
ED	Exposure Duration	days/event	1	MADEP, 1995
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{dermal}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C1	conversion factor for units	kg/mg	1E-06	Constant
BW	Body Weight of Receptor	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:
A. The exposure frequency is prorated to a six-month exposure period, or 130 events per 6 months. EP = 0.5 years (6 months)

Abbreviations:
AF = Adherence Factor; MADEP = Massachusetts Department of Environmental Protection; NA = Not Applicable; SA = Skin Surface Area.

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

EXPOSURE PATHWAY: Incidental Ingestion of Sediment

$$ADD_{sed\text{-}oral} = \frac{EPC_{sed} * IR_{sed} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{nc}} \quad \text{Equation 15}$$

$$LADD_{sed\text{-}oral} = \frac{EPC_{sed} * IR_{sed} * EF * ED * EP * RAF_{oral} * C1}{BW * AP_{c}} \quad \text{Equation 16}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{sed\text{-}oral}$	Average Daily Dose	mg/kg-day	Calculated	Equation 15
$LADD_{sed\text{-}oral}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 16
EPC_{sed}	Exposure Point Concentration in Sediment	mg/kg	TABLE H-12	See Text
IR_{sed}	Sediment Ingestion Rate	mg/day	100	Activity-weighted ingestion rate; MADEP 2002 (Note A)
EF	Exposure Frequency	events/year	260	Five days per week for an entire year
ED	Exposure Duration	days/event	1	MADEP, 1995
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{oral}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C1	conversion factor for units	kg/mg	1E-06	Constant
BW	Body Weight of Receptor	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_{c}	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:
A. The sediment ingestion rate is based on MADEP's recommended soil ingestion rate of 100 mg/day (Technical Update, April 2002) for receptors involved in heavy excavation.
B. The exposure frequency is prorated to a six month exposure period, or 130 events per 6 months. EP = 0.5 years (6 months)

DRAFT

TABLE H-13
CONSTRUCTION WORKER EXPOSURE PROFILE
1 Horizon Way
Everett, Massachusetts

Equations Used to Calculate Average Daily Dose (ADD) and Lifetime Average Daily Dose (LADD)

EXPOSURE PATHWAY: Dermal Contact with Surface Water

$$ADD_{sw\text{-}dermal} = \frac{EPC_{sw} * SA * K_p * EF * ED * EP * RAF_{dermal} * C4}{BW * AP_{nc}} \quad \text{Equation 7}$$

$$LADD_{sw\text{-}dermal} = \frac{EPC_{sw} * SA * K_p * EF * ED * EP * RAF_{dermal} * C4}{BW * AP_{c}} \quad \text{Equation 8}$$

Parameter	Definition	Units	Receptor-Specific Values (ages >18 years)	Rationale/Reference
$ADD_{sw\text{-}dermal}$	Average Daily Dose	mg/kg-day	Calculated	Equation 7
$LADD_{sw\text{-}dermal}$	Lifetime Average Daily Dose	mg/kg-day	Calculated	Equation 8
EPC_{sw}	Exposure Point Concentration in Groundwater	mg/L	TABLE H-12	See Text
SA	Skin Surface Area	cm^2	3,107	Average skin surface area for adult females (ages 18-25) including forearms, hands, and feet; MADEP, 1995
K_p	Permeability Constant	cm/hr	Constituent-specific	TABLE H-15
EF	Exposure Frequency	events/year	104	Two days per week (Note A)
ED	Exposure Duration	hours/event	1	MADEP, 1995
EP	Exposure Period	years	0.5	Assumes a six-month construction project; MassDEP, 1995
RAF_{dermal}	Relative Absorption Factor	unitless	Constituent-specific	TABLE H-14
C4	conversion factor for units	L/cm^3	0.001	Constant
C5	conversion factor for units	mg/µg	0.001	Constant
BW	Body Weight	kg	58	Average body weight for adult female (ages 18-25). MassDEP, 2014.
AP_{nc}	Averaging Period, non-cancer	days	183	equals EP * 365 days/year
AP_c	Averaging Period, cancer	days	25,550	equals average lifetime, 70 years * 365 days/year

Notes:
A. The exposure frequency is prorated to a six-month exposure period, or 52 events per 6 months. EP = 0.5 years (6 months)

Abbreviations:
NA = Not applicable.

DRAFT

TABLE H-14
RELATIVE ABSORPTION FACTORS
1 Horizon Way
Everett, Massachusetts

DRAFT

COC	Exposure Pathways					
	Oral Soil		Dermal Water		Dermal Soil	
	Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen
1,1,1-Trichloroethane		1 a				0.03 a
1,1-Dichloroethane		1 a				0.03 a
1,2,3-Trichlorobenzene						
1,2,4-Trichlorobenzene		1 a				0.03 a
1,2,4-Trimethylbenzene						
1,2-Dichlorobenzene		1 a				0.03 a
1,2-Dichloroethane	1 a	1 a			0.03 a	0.03 a
1,3,5-Trimethylbenzene						
1,3-Dichlorobenzene		1 a				0.03 a
1,4-Dichlorobenzene	1 a	1 a			0.03 a	0.03 a
2-Butanone		1 a		1 b		0.03 a
2-Chlorotoluene						
4-Chlorotoluene						
Acetone		1 a		1 b		0.03 a
Benzene	1 a	1 a			0.03 a	0.03 a
Carbon Disulfide		1 b		1 b		0.12 b
Chlorobenzene		1 a				0.03 a
Chloroform		1 a				0.03 a
cis-1,2-Dichloroethene		1 a				0.03 a
Diethylether						
Ethylbenzene		1 a		1 b		0.03 a
Isopropylbenzene						
Methylene Chloride	1 a	1 a			0.03 a	0.03 a
Methyl-Tert-Butyl-Ether		1 a				0.03 a
Naphthalene		0.3 a		1 b		0.1 a
n-Butylbenzene						
n-Propylbenzene						
p-Isopropyltoluene		1 b				0.1 b
sec-Butylbenzene						
Tetrachloroethene	1 a	1 a			0.03 a	0.03 a
Toluene		1 a		1 b		0.03 a
Trichloroethene	1 a	1 a			0.03 a	0.03 a
Vinyl Chloride	1 a	1 a			0.03 a	0.03 a
Xylene (Total)		1 a		1 b		0.03 a
Styrene	1 a	1 a			0.03 a	0.03 a
1,2-Dichloropropane	1 a	1 a			0.03 a	0.03 a
1,2,3-Trichloropropane					0.11 b	0.11 b
1,4-Dioxane	1 a	1 a			0.03 a	0.03 a
2,4-Dimethylphenol		1 b				0.3 a
1-Methylnaphthalene		0.3 e		1 e		0.1 e
2-Methylnaphthalene		0.3 a				0.1 a
2-Methylphenol		1 b				0.18 b
4-Methylphenol		1 b				0.18 b
Acenaphthene		0.3 a		1.1 b		0.1 a
Acenaphthylene		0.3 a		1.1 b		0.1 a
Anthracene		0.3 a		1.1 b		0.1 a
Benzo(a)Anthracene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Benzo(a)Pyrene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Benzo(e)Pyrene						
Benzo(b)Fluoranthene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Benzo(g,h,i)Perylene		0.3 a		1.1 b		0.1 a
Benzo(k)Fluoranthene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Bis(2-Ethylhexyl)phthalate	1 a	1 a			0.1 a	0.1 a
Butylbenzylphthalate		0.96 b				0.18 b
Chrysene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Dibenzo(a,h)anthracene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Dibenzofuran						0.18 b
Di-n-butylphthalate		0.96 b				0.18 b
Di-n-octylphthalate		0.96 b				0.18 b
Fluoranthene		0.3 a		1.1 b		0.1 a
Fluorene		0.3 a		1.1 b		0.1 a
Indeno(1,2,3-cd)Pyrene	0.3 a	0.3 a	1.1 b	1.1 b	0.02 a	0.02 a
Phenanthrene		0.3 a		1.1 b		0.1 a
Phenol		1 a				0.3 a
Pyrene		0.3 a		1.1 b		0.1 a
bis(2-Chloroethoxy)methane						
Pentachlorophenol	1 a	1 a			0.3 a	0.3 a
3,3-Dichlorobenzidine	1 a	1 a			0.1 a	0.1 a
C11-C22 Aromatic Fraction		0.3 a				0.1 a
C19-C36 Aliphatic Fraction		1 a				0.2 a
C5-C8 Aliphatic Fraction		1 a				0.1 a
C9-C10 Aromatic Fraction		1 a				0.2 a
C9-C18 Aliphatic Fraction		1 a				0.2 a
4,4'-DDD	1 a	1 a			0.03 a	0.03 a
4,4'-DDE	1 a	1 a			0.03 a	0.03 a
4,4'-DDT	1 a	1 a			0.03 a	0.03 a
alpha-BHC	1 g	1 g			0.04 g	0.04 g
alpha-Chlordane	1 h	1 h			0.04 h	0.04 h
beta-BHC	1 g	1 g			0.04 g	0.04 g
Dieldrin	1 a	1 a			0.1 a	0.1 a
Endosulfan I		1 j				0.1 j
Endosulfan II		1 j				0.1 j
Endrin Ketone		1 i				0.1 i
gamma-BHC	1 a	1 a			0.04 a	0.04 a
Heptachlor Epoxide	1 a	1 a			0.1 a	0.1 a
Hexachlorobenzene	1 a	1 a			0.1 a	0.13 a
Methoxychlor		1 a				0.1 a
2,4-DB (2,4-D Butyric Acid)		0.96 b				0.18 b
2,4-D		0.96 b				0.18 b
2,4,5-T		0.96 b				0.18 b
Dicamba		1 b				0.19 b
2,4,5-TP/Silvex		0.96 b				0.18 b
Dalapon		0.96 b				0.18 b
Dichlorprop						
Dinoseb		0.96 b				0.18 b
MCPA		0.96 b				0.18 b
MCPP		0.96 b				0.18 b
Polychlorinated Biphenyls	1 a	1 a			0.1 a	0.1 a
Aroclor - 1242	1 a	1 a			0.1 a	0.1 a
Aroclor - 1248	1 a	1 a			0.1 a	0.1 a
Aroclor - 1254	1 a	1 a			0.1 a	0.1 a
Aroclor - 1260	1 a	1 a			0.1 a	0.1 a
Aroclor - 1262	1 a	1 a			0.1 a	0.1 a
Aroclor - 1268	1 a	1 a			0.1 a	0.1 a
2,3,7,8-TCDD	1 a	1 a			0.1 a	0.1 a
Antimony		1 a				0.1 a
Arsenic	0.5 a	0.5 a	1 b	1 b	0.03 a	0.03 a
Barium		1 a				0.1 a
Beryllium		1 a				0.1 a
Cadmium		1 a		20 b		0.01 a
Chromium (total)		1 a		9 b		0.1 a
Chromium (III)		1 a		9 b		0.1 a
Copper		0.7 b				0.05 b
Cyanide		1 a				0.1 a
Iron		0.71 b				0.05 b
Lead		0.3 c		1 b		0.006 a
Mercury		0.5 a		6.7 b		0.1 a
Nickel		1 a				0.2 a
Selenium		1 a				0.01 a
Silver		1 a		25 b		0.3 a
Thallium		1 a				0.01 a
Vanadium		1 a				0.1 a
Zinc		1 a				0.1 a

Notes:
a. MassDEP 2014 ShortForm (v0414.xlsx).
b. GZA-derived value based on the default absorption efficiencies listed in Table B-11 of the MassDEP (1995) guidance.
c. USEPA 2007. User's Guide for the Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) Windows.
e. Value for 2-methylnaphthalene used for 1-methylnaphthalene.
g. Absorption values for gamma-BHC were used for alpha-BHC and beta-BHC.
h. Absorption values for Chlordane (Technical) were used for alpha-Chlordane.
i. Absorption values for Endrin were used for Endrin Ketone.
j. Absorption values for Endosulfan were used for Endosulfan I and Endosulfan II.

Notes:
1. A blank space indicates no data found.
2. Where data are lacking, a default value of 1 is used in subsequent risk calculations.

Abbreviations:
COC = Constituent of Concern; RAF = Relative Absorption Factors.

TABLE H-15
CONSTITUENT-SPECIFIC PERMEABILITY COEFFICIENTS
1 Horizon Way
Everett, Massachusetts

COC	Permeability Coefficient Kp (cm/hour)	Notes
1,1,1-Trichloroethane	1.3E-02	t
Acetone	5.2E-04	t
Benzene	1.5E-02	t
Carbon Disulfide	1.1E-02	d
Ethylbenzene	4.8E-02	t
Methyl-Tert-Butyl-Ether	2.5E-03	t
Naphthalene	4.6E-02	t
Toluene	3.1E-02	t
Xylene (Total)	5.2E-02	t
1-Methylnaphthalene	4.6E-02	b, e
2-Methylnaphthalene	9.0E-02	t
4-Methylphenol	7.5E-03	d
Acenaphthene	8.4E-02	t
Acenaphthylene	1.1E-01	t
Anthracene	1.6E-01	t
Benzo(a)Anthracene	4.6E-01	t
Benzo(a)Pyrene	6.5E-01	t
Benzo(b)Fluoranthene	6.7E-01	t
Benzo(g,h,i)Perylene	8.9E-01	t
Benzo(k)Fluoranthene	6.1E-01	t
Chrysene	4.6E-01	t
Dibenzo(a,h)anthracene	1.4E+00	t
Dibenzofuran	9.5E-02	d
Fluoranthene	2.2E-01	t
Fluorene	1.1E-01	t
Indeno(1,2,3-cd)Pyrene	9.9E-01	t
Phenanthrene	1.4E-01	t
Phenol	4.3E-03	t
Pyrene	2.8E-01	t
C11-C22 Aromatic Fraction	5.2E-01	t
C19-C36 Aliphatic Fraction	2.0E+00	d,f
C5-C8 Aliphatic Fraction	1.7E-01	t
C9-C10 Aromatic Fraction	1.3E-01	t
C9-C18 Aliphatic Fraction	1.5E+00	t
Antimony	1.0E-03	i,t
Arsenic	1.0E-03	i,t
Barium	1.0E-03	i,t
Beryllium	1.0E-03	i,t
Cadmium	1.0E-03	i,t
Chromium (total)	2.0E-03	t
Copper	1.0E-03	i
Cyanide	1.0E-03	t
Lead	1.0E-04	t
Mercury	1.0E-03	i,t
Nickel	2.0E-04	t
Selenium	1.0E-03	i,t
Thallium	1.0E-03	i,t
Vanadium	1.0E-03	i,t
Zinc	6.0E-04	t

DRAFT

Notes:

b. Estimated Kp value obtained from MassDEP Guidance for Disposal Site Risk Characterization - In Support of the Massachusetts Contingency Plan, Interim Final Policy July 1995. Table B-10.

d. Kp values were estimated by GZA using Equation 3.8 from US EPA, "Supplemental Guidance for Dermal Risk Assessment", OSWER No. 9285.7-02 EP, August, 2004. logKp=-2.80+0.66logKow-0.0056MW. Kow values from USEPA EPI Suite.

e. The value for naphthalene was used.

f. Cyclododecane was used as surrogate for this fraction.

i. A default value of 0.001 cm/hr was used to represent the Kp for inorganic compounds not tested as recommended in U.S. EPA, "Dermal Exposure Assessment: Principles and Applications," Interim Report, Office of Research and Development, EPA/600/8-91/001B, January

t. MassDEP 2014 ShortForm (v0414.xlsx).

TABLE H-16
SUMMARY OF DOSE-RESPONSE INFORMATION - NONCARCINOGENIC EFFECTS - ORAL
1 Horizon Way
Everett, Massachusetts

COC	Oral Subchronic Reference Dose (mg/kg-day)		Oral Chronic Reference Dose (mg/kg-day)		Chronic Oral RfD UF X MF	Target Organ/System	Critical Effect	Study Animal	Study Method
1,1,1-Trichloroethane	7	a	2	a	1000 x 1	body weight	reduced body weight	mouse	oral - diet
1,1-Dichloroethane	2	g	0.2	g	3000 x 1	kidney	renal injury	rat	oral
1,2,3-Trichlorobenzene	0.008	g	0.0008	ag		body weight	reduction in body weight gain	rat	oral - diet
1,2,4-Trichlorobenzene	0.09	g	0.01	a	1000 x 1	Reproductive	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	rat	oral-drinking water
1,2,4-Trimethylbenzene									
1,2-Dichlorobenzene	0.9	c	0.09	a	1000 x 1	NA	no observed effects	rat	oral-gavage
1,2-Dichloroethane	0.02	g	0.02	c		kidney	increased kidney weight	rat	oral-drinking water
1,3,5-Trimethylbenzene	0.1	ag	0.01	ag	10,000 x 1	liver	Increased liver weights	rat	oral
1,3-Dichlorobenzene	0.9	z	0.09	z					
1,4-Dichlorobenzene	0.9	z	0.09	z					
2-Butanone	0.6	d	0.6	a	1000 x 1	fetus	decreased fetal birth weight	rat	oral-drinking water
2-Chlorotoluene	0.2	b	0.02	a	1000 x 1	Whole Body	Decrease in Body Weight Gain	rat	oral-gavage
4-Chlorotoluene	0.2	q	0.02	q					
Acetone	2.7	c	0.9	a	1000 x 1	liver, kidney	increased liver and kidney weights and nephrotoxicity	rat	oral-gavage
Benzene	0.01	c	0.004	a	300 x 1	blood	decreased lymphocyte count	human	inhalation
Carbon Disulfide	0.1	b	0.1	a	100 x 1	fetus	fetal toxicity/malformations	rabbit	inhalation
Chlorobenzene	0.07	g	0.02	a	1000 x 1	liver	histopathologic changes	dog	oral-capsule
Chloroform	0.01	b	0.01	a	1000 x 1	liver	fatty cyst formation, SGPT	dog	oral-capsule
cis-1,2-Dichloroethene	0.02	g	0.002	a	3000 x 1	kidney	increased relative kidney weight	rat	oral-gavage
Diethylether	2	b	0.2	a	3000 x1	whole body	depressed body weights	rat	oral
Ethylbenzene	0.05	g	0.05	h					
Isopropylbenzene	0.4	b	0.1	a	1000 x 1	kidney	increased kidney weight	rat	oral-gavage
Methylene Chloride	0.006	d	0.006	a	30 x 1	liver	hepatic effects (hepatic vacuolation, liver foci)	rat	drinking water
Methyl-Tert-Butyl-Ether	1	c	0.1	c					
Naphthalene	0.2	c	0.02	a	3000 x 1	whole body	decreased body weight	rat	oral-gavage
n-Butylbenzene	0.3	u	0.03	u					
n-Propylbenzene	0.3	u	0.03	u					
p-Isopropyltoluene	0.3	u	0.03	u					
sec-Butylbenzene	0.3	u	0.03	u					
Tetrachloroethene	0.006	d	0.006	a	1000 x 1	nervous system	neurotoxicity	human	inhalation
Toluene	0.8	g	0.08	a	3000 x 1	liver, kidney	organ weight changes	rat	oral-gavage
Trichloroethene	0.0005	d	0.0005	a	multiple	immune system, heart	immunological effects, heart malformations	rat, mouse	drinking water
Vinyl Chloride	0.003	d	0.003	a	30 x 1	liver	liver cell polymorphism	rat	feeding study
Xylene (Total)	0.4	g	0.2	a	1000 x 1	CNS, whole body	hyperactivity, decreased body weight, increased mortality	rat	oral-gavage
Styrene	2	c	0.2	a	1000 x 1	red blood cells, liver	Red blood cell and liver effects	dog	oral
1,2-Dichloropropane									
1,2,3-Trichloropropane	0.08	ai	0.004	a	300 x1	liver	increased absolute liver weight	male rats	oral-gavage
1,4-Dioxane	0.03	d	0.03	a	300 x 1	liver and kidney	liver and kidney toxicity	rat	oral
2,4-Dimethylphenol	0.05	g	0.02	a	3000 x 1	blood, whole body	lethargy, prostration, and ataxia; hematological changes	mouse	oral-gavage
1-Methylnaphthalene	0.007	d	0.007	ag		lung	pulmonary alveolar proteinosis	mouse	oral-diet
2-Methylnaphthalene	0.004	d	0.004	a	1000x1	lung	Pulmonary alveolar proteinosis	mouse	oral-diet
2-Methylphenol	0.5	b	0.05	a	1000 x 1	CNS	decreased body weights and neurotoxicity	rat	oral-gavage
4-Methylphenol	0.005	b	0.005	b	1000 x 1	CNS, resp.,body	hypoactivity, distress, maternal death	rabbit	oral-gavage
Acenaphthene	0.2	g	0.06	a	3000 x 1	liver	hepatoxicity	mouse	oral-gavage
Acenaphthylene	0.3	f	0.03	f					
Anthracene	1	g	0.3	a	3000 x 1	NA	no observed effects	mouse	oral-gavage
Benzo(a)Anthracene	0.3	f	0.03	f					
Benzo(a)Pyrene	0.3	f	0.03	f					
Benzo(e)Pyrene									
Benzo(b)Fluoranthene	0.3	f	0.03	f					
Benzo(g,h,i)Perylene	0.3	f	0.03	f					
Benzo(k)Fluoranthene	0.3	f	0.03	f					
Bis(2-Ethylhexyl)phthalate	0.02	d	0.02	a	1000 x 1	liver	increased relative liver weight	guinea pig	oral-diet
Butylbenzylphthalate	2	b	0.2	a	1000 x 1	liver	significant increased liver to body weight ratio	rat	oral-diet
Chrysene	0.3	f	0.03	f					
Dibenzo(a,h)anthracene	0.3	f	0.03	f					
Dibenzofuran	0.004	g	0.001	ag		whole body	aggregate critical effects of reduced length and organ weight and excess abdominal fat	rat	oral-diet
Di-n-butylphthalate	1	b	0.1	a	1000 x 1	mortality	increased mortality	rat	oral-diet
Di-n-octylphthalate	0.4	ai	0.04	aj					
Fluoranthene	0.4	b	0.04	a	3000 x 1	kidney, liver	nephropathy, increased liver weights, hematological alterations	mouse	oral-gavage
Fluorene	0.4	b	0.04	a	3000 x 1	blood	decreased red blood cell and hemoglobin	mouse	oral-gavage
Indeno(1,2,3-cd)Pyrene	0.3	f	0.03	f					
Phenanthrene	0.3	f	0.03	f					
Phenol	0.3	d	0.3	a	100 x 1	whole body	decreased maternal weight	rat	oral-gavage
Pyrene	0.3	b,g	0.03	a	3000 x 1	kidney	tubular pathology, decreased organ weight	mouse	oral-gavage
bis(2-Chloroethoxy)methane	0.03	g	0.003	g		liver	lesions	rat	oral-gavage
Pentachlorophenol	0.005	d	0.005	a	300 x 1	liver	hepatoxicity	beagle dog	oral- gelatin capsules
3,3-Dichlorobenzidine									
C11-C22 Aromatic Fraction	0.3	f	0.03	f					
C19-C36 Aliphatic Fraction	6	f	2	f		liver	liver granuloma		
C5-C8 Aliphatic Fraction	0.4	f	0.04	f		whole body and nervous system	reduced body weight and neurotoxicity at higher doses	rat	
C9-C10 Aromatic Fraction	0.3	f	0.03	f					
C9-C18 Aliphatic Fraction	1	f	0.1	f	1000 5000	reproduction and liver	changes in serum chemistry and liver weight		oral
4,4'-DDD	0.0005	k	0.0005	k					
4,4'-DDE	0.0005	k	0.0005	k					
4,4'-DDT	0.0005	b	0.0005	a	100 x 1	liver	lesions	rat	oral-diet
alpha-BHC	0.003	s	0.0003	l					
alpha-Chlordane	0.0005	d	0.0005	n	300 x 1	liver	necrosis	mouse	oral
beta-BHC	0.003	l	0.0003	i					
Dieldrin	0.00005	b	0.00005	a	100 x 1	liver	lesions	rat	oral-diet
Endosulfan I	0.006	o	0.006	o					
Endosulfan II	0.006	o	0.006	o					
Endrin Ketone	0.0003	p	0.0003	p					
gamma-BHC	0.003	b	0.0003	a	1000 x 1	liver, kidney	toxicity	rat	oral-diet
Heptachlor Epoxide	0.000013	b	0.000013	a	1000 x 1	liver	increased liver to body weight ratio	dog	oral-diet
Hexachlorobenzene	0.00001	ag	0.00001	g,h		ovary	Degenerative changes in primary ovarian follicles	monkey	oral-capsule
Methoxychlor	0.005	b	0.005	a	1000 x 1	developmental	excessive loss of litters	rabbit	oral
2,4-DB (2,4-D Butyric Acid)	0.008	b	0.008	a	1000 x 1	whole body	mortality, internal hemorrhage	dog	oral
2,4-D	0.01	b	0.01	a	100 x 1	blood, liver, kidney	hematologic, hepatic and renal toxicity	rat	oral
2,4,5-T	0.1	b	0.01	a	300 x 1	blood, reproduction	increased urinary corproporphyrins, reduced neonatal survival	rat	feeding study
Dicamba	0.03	b	0.03	a	100 x 1	developmental	reduced net weight gain, reduced fetal body weight, and increased post implantation loss	rabbit	oral-gavage
2,4,5-TP/Silvex	0.008	b	0.008	a	100 x 1	hepatic	histopathological changes in liver	dog	diet
Dalapon	0.03	b	0.03	a	300 x 1	urinary	increased kidney body weight ratio	rat	diet
Dichlorprop									
Dinoseb	0.001	b	0.001	a	1000 x 1	developmental	decreased fetal weight	rat	diet
MCPA	0.0005	b	0.0005	a	300 x 1	hepatic, urinary	kidney and liver toxicity	dog	oral administration
MCPP	0.001	b	0.001	a	3000 x 1	urinary	increased absolute and relative kidney weights	rat	diet
Polychlorinated Biphenyls	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1242	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1248	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1254	0.00005	b	0.00002	a	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1260	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1262	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
Aroclor - 1268	0.00005	m	0.00002	m	300 x 1	eye, nails, immune system	ocular exudate, inflamed Meibomian glands, distorted nail growth	monkey	oral-capsule
2,3,7,8-TCDD	7E-10	d	7E-10	a		reproduction; hormone	Decreased sperm count and motility in men exposed to TCDD as boys; Increased Thyroid Stimulating Hormone in neonates.	Human	industrial accident
Antimony	0.0004	b	0.0004	a	1000 x 1	blood	longevity, blood glucose, and cholesterol	rat	oral
Arsenic	0.0003	d	0.0003	a	3 x 1	skin	hyperpigmentation and keratosis	human	oral-diet
Barium	0.07	b	0.2	a	3 x 1	NA	no adverse effects	human	oral-water
Beryllium	0.005	b	0.002	a	300 x 1	small intestine	small intestinal lesions	dog	oral-diet
Cadmium	0.0005	d,ab	0.0005	a,ab	10 x 1	kidney	significant proteinuria	human	oral-diet
Chromium (total)	0.02	b,ak	0.003	a,ak	300 x 3	NA	no effects observed	rat	oral-diet
Chromium (III)	1.5	d	1.5	a	100 x 10	NA	no effects observed	rat	oral-diet
Copper	0.037142857	d	0.037142857	v					
Cyanide	0.006	c	0.0006	a	3000 x 1	reproduction	Decreased cauda epididymis weight	male rats	oral-water
Iron	0.7	g	0.7	g		Gastrointestinal tract	Gastrointestinal effects	human	oral-diet
Lead	0.00075	c,e	0.00075	c,e		developmental, kidney, blood pressure	Delays in physical or mental development for infants and children, kidney problem and high blood pressure for adults		
Mercury	0.0003	d	0.0003	c					
Nickel	0.02	b	0.02	a,y	300 x 1	whole body	decreased body weights and organ weights	rat	oral-diet
Selenium	0.005	b	0.005	a	3 x 1	skin, blood, CNS	selenosis	human	oral
Silver	0.005	b	0.005	a	3 x 1	skin	argyria	human	intravenous
Thallium	0.0008	c,i	0.00008	c,i	1000 x 1	hair follicles	atrophy of hair follicles	rat	oral-water
Vanadium	0.009	a,aa	0.009	a,aa	100 x 1	hair cystine	Decrease hair cystine	rat	oral
Zinc	0.3	b	0.3	a	3 x 1	metabolism	copper balance affected	human	oral-diet

DRAFT

Hierarchy of Sources:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Assessment Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. Chronic oral RfD has been used here as subchronic oral RfD equivalent.
e. Derived from the USEPA Action Level for lead for Treatment Technique (0.015 milligrams per liter, mg/L). The derivation is presented in the MassDEP (1992) Risk Assessment ShortForm - Residential Scenario.
f. MassDEP, Characterizing Risks Posed by Petroleum Contaminated Sites: Implementation of the MassDEP VPH/EPH Approach, Final Policy (#WSC-02-411). Table 4-13. December 2002.
g. US EPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV); current as of February, 2016.
h. PPRTV subchronic value used as chronic RfD.
i. The toxicity value for thallium was withdrawn from IRIS. MassDEP continues to use it pending new toxicity information.
k. Value for 4,4'-DDT was used for 4,4'-DDD and 4,4'-DDE.
l. Value for gamma-BHC was used for alpha-BHC and beta-BHC.
m. Value from IRIS for Aroclor 1254 was used for all other Aroclors listed.
n. Value from IRIS for Chlordane (Technical) was used for alpha-Chlordane.
o. Value for Endosulfan was used for Endosulfan I and Endosulfan II
p. Value for Endrin was used for Endrin Ketone.
q. Value for 2-Chlorotoluene was used for 4-Chlorotoluene.
s. Value for 1,2,4-trichlorobenzene was used for 1,2,3-trichlorobenzene.
u. MassDEP values for C9-C10 aromatics were used for this structurally similar constituent.
v. The oral RfD for copper was derived based on the Massachusetts MCL for copper (1.3 mg/L), assuming a drinking water rate of 2 liters per day and a body weight of 70 kg.
z. Value for 1,2-Dichlorobenzene was used for 1,3-Dichlorobenzene and 1,4-Dichlorobenzene.
aa. Value for vanadium pentoxide.
ab. Oral toxicity values for 'Cadmium (Diet)' (1 x10-3 mg/kg-day) used for soil exposures; oral toxicity values for 'Cadmium (Water)' (5 x 10-4 mg/kg-day) used for water exposures.
ag. PPRTV screening value.
ai. ATSDR; obtained from RAIS, Current as of February, 2016.
aj. Value withdrawn from PPRTV; obtained from RAIS, Current as of February, 2016.
ak. Values for hexavalent chromium (CrVI).

Notes:
1. A blank space indicates no data found.

Abbreviations:
CNS=Central nervous system; SGPT=Serum glutamic pyruvic transaminase; COC = Constituent of Concern; MF= Modifying Factor; NA= Not Applicable; RfD = Reference Dose; UF= Uncertainty Factor.
EPH = Extractable Petroleum Hydrocarbon; VPH = Volatile Petroleum Hydrocarbon

TABLE H-17
SUMMARY OF DOSE-RESPONSE INFORMATION - NONCARCINOGENIC EFFECTS - INHALATION
1 Horizon Way
Everett, Massachusetts

COC	Inhalation Subchronic Reference Concentration (mg/m³)		Inhalation Chronic Reference Concentration (mg/m³)		Chronic Inhalation RfC UF x MF	Target Organ/System	Critical Effect	Study Animal	Study Method
1,1,1-Trichloroethane	5	a	5	a		liver	Liver histopathologic changes	rat	inhalation
1,1-Dichloroethane	8	x	0.8	x					
1,2,3-Trichlorobenzene	0.02	o	0.002	o					
1,2,4-Trichlorobenzene	0.02	h	0.002	h		urinary	Significant changes in coproporphyrin and uroporphyrin excretion	rat	inhalation
1,2,4-Trimethylbenzene	0.07	h	0.007	h		blood	decreased clotting time	female rats	inhalation
1,2-Dichlorobenzene	2.4	l	0.8	l					
1,2-Dichloroethane	0.07	h	0.007	h		Neurological	Neurobehavioral impairment	human	inhalation
1,3,5-Trimethylbenzene	0.01	h	0.006	z					
1,3-Dichlorobenzene	2.4	l	0.8	l					
1,4-Dichlorobenzene	2.4	c	0.8	a	100 x 1	liver	increased organ weight	rat	inhalation
2-Butanone	5	d	5	a	300 x 1	fetus	developmental toxicity	mouse	developmental
2-Chlorotoluene	0.8	h							
4-Chlorotoluene									
Acetone	0.8	d	0.8	e					
Benzene	0.01	d	0.01	e					
Carbon Disulfide	0.7	b	0.7	a	30 x 1	PNS	peripheral nervous system dysfunction	human	inhalation-occupat.
Chlorobenzene	0.5	h	0.05	h		liver, kidney	Increased weight and hepatocelluair hypertrophy; Increased weights, tubule dilation, inflamation of the interstitial cells, and regeneration of the epithelium in males	rat	inhalation
Chloroform	0.66	d	0.66	e					
cis-1,2-Dichloroethene	0.06	x	0.006	x					
Diethylether	1.6	e	1.6	e					
Ethylbenzene	9	h	1	a	300 x 1	fetus	developmental toxicity	rat/rabbit	inhalation
isopropylbenzene	0.4	d,l	0.4	a	1000 x 1	kidney, adrenal	increased organ weights	rat	inhalation
Methylene Chloride	0.6	d	0.6	a	100 x 1	liver	hepatic effects (hepatic vacuolation)	rat	inhalation
Methyl-Tert-Butyl-Ether	3	d	3	a	100 x 1	liver, kidney	renal lesions increased organ weight	rat	inhalation
Naphthalene	0.003	d	0.003	a	3000 x 1	respiratory system	hyperplasia and metaplasia in epithelium	mouse	inhalation
n-Butylbenzene	0.5	s	0.05	s					
n-Propylbenzene	0.5	s	0.05	s					
p-Isopropyltoluene	0.5	s	0.05	s					
sec-Butylbenzene	0.5	s	0.05	s					
Tetrachloroethene	0.04	d	0.04	a		nerve	neurotoxicity	humans	inhalation-occupat.
Toluene	5	d	5	a		CNS	neurological effects	humans	inhalation-occupat.
Trichloroethene	0.002	d	0.002	a	Multiple (10, 100)	hepatic, renal, neurological, immunological, reproductive, and develoomental	critical effects		
Vinyl Chloride	0.1	d	0.1	a	30 x 1	liver	liver cell polymorphism	rat	feeding study
Xylene (Total)	0.4	h	0.1	a	300 x 1	CNS	impaired motor coordination	rat	inhalation
Styrene	3	b,c	1	a	30 x 1	CNS	CNS effects	human	occupational, inhalation
1,2-Dichloropropane	0.012	c	0.004	a	300 x 1	nasal cavity	Hyperplasia of the nasal mucosa	rat	inhalation
1,2,3-Trichloropropane	0.0003	d	0.0003	a	3000x1	bronchus	peribronchial lymphoid hyperplasia	male rats	inhalation
1,4-Dioxane	0.03	d	0.03	a		epithelium	astrophy and respiratory metaplasia of the olfactory epithelium	male rats	inhalation
2,4-Dimethylphenol	0.2	x	0.07	x					
1-Methylnaphthalene	0.5	j	0.05	j					
2-Methylnaphthalene	0.5	t	0.05	t					
2-Methylphenol	0.175	d	0.175	x					
4-Methylphenol	0.12	d	0.12	e					
Acenaphthene	0.5	t	0.05	t					
Acenaphthylene	0.5	t	0.05	t					
Anthracene	0.5	t	0.05	t					
Benzo(a)Anthracene	0.5	t	0.05	t					
Benzo(a)Pyrene	0.5	t	0.05	t					
Benzo(e)Pyrene									
Benzo(b)Fluoranthene	0.5	t	0.05	t					
Benzo(g,h,i)Perylene	0.5	t	0.05	t					
Benzo(k)Fluoranthene	0.5	t	0.05	t					
Bis(2-Ethylhexyl)phthalate	0.007	d	0.007	e					
Butylbenzylphthalate									
Chrysene	0.5	t	0.05	t					
Dibenzo(a,h)anthracene	0.5	t	0.05	t					
Dibenzofuran									
Di-n-butylphthalate									
Di-n-octylphthalate									
Fluoranthene	0.5	t	0.05	t					
Fluorene	0.5	t	0.05	t					
Indeno(1,2,3-cd)Pyrene	0.5	t	0.05	t					
Phenanthrene	0.5	t	0.05	t					
Phenol	0.26	d	0.26	e					
Pyrene	0.5	t	0.05	t					
bis(2-Chloroethoxy)methane									
Pentachlorophenol	0.00007	d	0.00007	c					
3,3-Dichlorobenzidine									
C11-C22 Aromatic Fraction	0.5	g	0.05	g					
C19-C36 Aliphatic Fraction									
C5-C8 Aliphatic Fraction	0.2	g	0.2	g		neurological	neurotoxicity	epidemiology study	
C9-C10 Aromatic Fraction	0.5	g	0.05	g					
C9-C18 Aliphatic Fraction	0.6	g	0.2	g		nervous system	changes in blood chemistry, body and liver weight, neurotoxicity	rats	inhalation
4,4'-DDD	0.00175	d	0.00175	x					
4,4'-DDE	0.00175	d	0.00175	x					
4,4'-DDT	0.00175	d	0.00175	x					
alpha-BHC	0.0011	aa	0.0011	aa					
alpha-Chlordane	0.007	c	0.0007	k	1000 x 1	liver	effects	rat	inhalation
beta-BHC	0.0011	aa	0.0011	aa					
Dieldrin	0.000175	d	0.000175	x					
Endosulfan I	0.021	d	0.021	x,ac					
Endosulfan II	0.021	ac	0.021	ac					
Endrin Ketone	0.0011	ad	0.0011	ad					
gamma-BHC	0.011	x	0.0011	x					
Heptachlor Epoxide	0.000046	d	0.000046	x					
Hexachlorobenzene	0.00004	x	0.00004	x					
Methoxychlor	0.018	d	0.018	x					
2,4-DB (2,4-D Butyric Acid)									
2,4-D									
2,4,5-T									
Dicamba									
2,4,5-TP/Silvex									
Dalapon									
Dichlorprop									
Dinoseb									
MCPA									
MCPP									
Polychlorinated Biphenyls	0.00002	d	0.00002	e					
Aroclor - 1242	0.00002	d	0.00002	e,ag					
Aroclor - 1248	0.00002	d	0.00002	e,ag					
Aroclor - 1254	0.00002	d	0.00002	e,ag					
Aroclor - 1260	0.00002	d	0.00002	e,ag					
Aroclor - 1262	0.00002	d	0.00002	e,ag					
Aroclor - 1268	0.00002	d	0.00002	e,ag					
2,3,7,8-TCDD	0.000000002	x	2E-09	x					
Antimony	0.01	d	0.01	e					
Arsenic	0.00002	d	0.00002	e					
Barium	0.005	b	0.0005	b	1000 x 1	fetus	fetotoxicity	rat	inhalation-intermittent
Beryllium	0.00002	d	0.00002	a	10 x 1	lung	chronic beryllium disease	human-male	inhalation-occupat.
Cadmium	0.00002	d	0.00002	e					
Chromium (total)	0.0003	c,af	0.0001	a,af					
Chromium (III)	0.0003	c,af	0.0001	a,af					
Copper	0.003	d	0.003	e					
Cyanide	0.003	c	0.0008	a		thyroid	Thyroid enlargement and altered iodide uptake	Epidemiology study	inhalation
Iron									
Lead	0.001	d	0.001	e					
Mercury	0.0003	d,r	0.0003	a,r	30 x 1	CNS	neurotoxicity	human	inhalation-occupat.
Nickel	0.001	d	0.001	e					
Selenium	0.003	d	0.003	e					
Silver	0.00014	d	0.00014	c					
Thallium	0.000014	d	0.000014	c					
Vanadium	0.001	d	0.001	c					
Zinc	0.0014	d	0.0014	c					

DRAFT

Hierarchy of Sources:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. Chronic RfC has been used here as subchronic RfC as a conservative step.
e. Allowable Threshold Concentration (ATC) calculated following Chemical Health Effects Assessment Methodology and the Method to Derive Allowable Ambient Limits (CHEM/AAL). ORS Report 90-1. ATC = 5 x TEL. TELs listed in MassDEP, 2014.
g. MassDEP (2003), Final Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology. See: http://www.mass.gov/dep/cleanup/laws/tphtox03.doc
h. US EPA Provissional Peer Reviewed Toxicity Values for Superfund (PPRTV); current as of February, 2016.
l. The chronic and subchronic RfCs for 1,4-Dichlorobenze are used for 1,2-Dichlorobenzene and 1,3- Dichlorobenzene.
j. Values for 2-methylnaphthalene were used for 1-methylnaphthalene.
k. Values from IRIS for Chlordane (Technical) were used for alpha-Chlordane.
l. A subchronic RfC for isopropylbenzene is available in HEAST (9e-2 mg/m3) however, based on the chronic value being higher, the chronic value was used as a default value.
o. Value for 1,2,4-Trichlorobenzene was used for 1,2,3-Trichlorobenzene
r. Value for elemental mercury.
s. MassDEP values for C9-C10 aromatics were used for this structurally similar constituent.
t. Toxicity values for PAHs are consistent with the approach presented in "Updated Petroleum Hydrocarbon Fraction Toxicity Values for the VPH/EPH/APH Methodology" MassDEP 2003 and Characterizing Risks Posed by Petroleum Contaminated Sites MassDEP 2002.
x. MassDEP 2014 ShortForm. MassDEP approach to convert oral RfD to RfC using RfC (mg/m3) = [RfD (mg/kg-day) * Body Weight (70 kg)] / Ventilation Rate (20 m3/day)
z. Value withdrawn from PPRTV.
aa. Value for gamma-BHC was used for alpha-BHC and beta-BHC.
ac. Oral RfD for Endosulfan was converted to RfC (see note x.) and used for Endosulfan I and Endosulfan II.
ad. Value for Endrin was used for Endrin Ketone.
af. Values for hexavalent chromium (CrVI).
ag. ATC for polychlorinated biphenyls (PCBs), not Aroclor-specific, used.

Notes:
1. A blank space indicates no data found.

Abbreviations:
CNS = Central nervous system; PNS = Peripheral nervous system; COC = Constituent of Concern; MF = Modifying Factor; NA = Not Applicable/Not Available; RfC = Reference Concentration; UF = Uncertainty Factor.
EPH = Extractable Petroleum Hydrocarbon; VPH = Volatile Petroleum Hydrocarbon; APH = Air-Phase Petroleum Hydrocarbons; PAH = Polycyclic Aromatic Hydrocarbon.

TABLE H-18
SUMMARY OF DOSE-RESPONSE INFORMATION - CARCINOGENIC EFFECTS
1 Horizon Way
Everett, Massachusetts

DRAFT

COC	Weight of Evidence Class		Oral Cancer Slope Factor (mg/kg/day)$^{-1}$		Target Organ/System (oral)	Study Animal	Study Method	Inhalation Unit Risk (µg/m^3)$^{-1}$		Target Organ/System (inhalation)	Study Animal	Study Method
1,1,1-Trichloroethane	inadequate information to assess carcinogenic potential	a										
1,1-Dichloroethane	C	a						1.6E-6	o			
1,2,3-Trichlorobenzene	inadequate information to assess carcinogenic potential	k										
1,2,4-Trichlorobenzene	Likely to be carcinogenic to humans	k	2.9E-02	k	liver	mouse	oral					
1,2,4-Trimethylbenzene												
1,2-Dichlorobenzene	D	a										
1,2-Dichloroethane	B2	a	9.1E-02	a	blood	rat	gavage	2.6E-5	a	blood	rat	gavage
1,3,5-Trimethylbenzene	inadequate information to assess carcinogenic potential	k										
1,3-Dichlorobenzene	D	a										
1,4-Dichlorobenzene	C	b	2.4E-02	b	liver	mouse	gavage	6.9E-6	i			
2-Butanone	D	a										
2-Chlorotoluene												
4-Chlorotoluene												
Acetone	0	a										
Benzene	A	a	5.5E-02	a	blood	human	inhalation	7.8E-6	c	blood	human	inhalation
Carbon Disulfide												
Chlorobenzene	D	a										
Chloroform	B2	a						2.3E-5	a	liver	mouse	oral-gavage
cis-1,2-Dichloroethene	D	a										
Diethylether												
Ethylbenzene	D	a										
Isopropylbenzene	D	a										
Methylene Chloride	likely to be carcinogenic in humans	a	2.0E-03	a	liver	mouse	oral-drinking water	1.0E-B	a	liver, lung	mouse	inhalation
Methyl-Tert-Butyl-Ether												
Naphthalene	C	a										
n-Butylbenzene												
n-Propylbenzene												
p-Isopropyltoluene												
sec-Butylbenzene												
Tetrachloroethene	likely to be carcinogenic in humans by all routes of exposure	a	2.0E-02	c				3.0E-6	c			
Toluene	0	a										
Trichloroethene	carcinogenic to humans	a	4.6E-02	a				5.0E-6	a	Renal, non-Hodgkin's lymphoma, and liver	human	inhalation
Vinyl Chloride	A	a	1.4E+00	a	liver	rat	oral-diet	8.8E-6	a	liver	rat	inhalation
Xylene (Total)	D	a										
Styrene	B2	c	3.0E-02	c				5.7E-7	c			
1,2-Dichloropropane	B2	b	6.8E-02	b	liver	mouse	oral-gavage	1.9E-5	d			
1,2,3-Trichloropropane	likely to be carcinogenic to humans	a	3.0E+01	a	multiple	female mouse	oral-gavage					
1,4-Dioxane	likely to be carcinogenic to humans	a	1.0E-01	a	hepatocellular adenomas and carcinomas	mouse	oral-water	5.0E-6	a	multiple (nasal, liver, kidney, peritoneal, mammary gland, and zymbal gland)	male rats	inhalation
2,4-Dimethylphenol												
1-Methylnaphthalene			2.9E-02	k	lung	mouse	oral					
2-Methylnaphthalene												
2-Methylphenol	C	a										
4-Methylphenol	C	a										
Acenaphthene												
Acenaphthylene	D	a										
Anthracene	0	a										
Benzo(a)Anthracene	B2	a	7.3E-01	g				2.1E-4	i			
Benzo(a)Pyrene	B2	a	7.3E+00	a	forestomach	mouse	oral-diet	2.1E-3	i			
Benzo(e)Pyrene												
Benzo(b)Fluoranthene	82	a	7.3E-01	g				2.1E-4	i			
Benzo(g,h,i)Perylene	D	a										
Benzo(k)Fluoranthene	B2	a	7.3E-02	g				2.1E-5	i			
Bis(2-Ethylhexyl)phthalate	B2	a	1.4E-02	a	liver	mouse	oral-diet	1.3E-6	d			
Butylbenzylphthalate	C	a										
Chrysene	B2	a	7.3E-02	g				2.1E-5	i			
Dibenzo(a,h)anthracene	B2	a	7.3E+00	g				2.1E-3	i			
Dibenzofuran	D	a										
Di-n-butylphthalate	D	a										
Di-n-octylphthalate												
Fluoranthene	D	a										
Fluorene	D	a										
Indeno(1,2,3-cd)Pyrene	B2	a	7.3E-01	g				2.1E-4	i			
Phenanthrene	D	a										
Phenol	D	a										
Pyrene	0	a										
bis(2-Chloroethoxy)methane												
Pentachlorophenol	B2	a	4.0E-01	a	liver	mouse	diet	1.0E-4	i			
3,3-Dichlorobenzidine	B2	a	4.5E-01	a				1.3E-4	i			
C11-C22 Aromatic Fraction												
C19-C36 Aliphatic Fraction												
C5-C8 Aliphatic Fraction												
C9-C10 Aromatic Fraction												
C9-C18 Aliphatic Fraction												
4,4'-DDD	82	a	2.4E-01	a	liver	mouse	diet	6.9E-5	i			
4,4'-DDE	82	a	3.4E-01	a	liver	mouse	diet	9.7E-5	i			
4,4'-DDT	B2	a	3.4E-01	a	liver	mouse, rat	diet	9.7E-5	a	liver	mouse, rat	diet
alpha-BHC	B2	a	6.3E+00	a	liver	mouse	diet	1.8E-3	a	liver	mouse	diet
alpha-Chlordane	82	h	3.5E-01	h	liver	mouse	oral-diet	1.0E-4	h	liver	mouse	oral-diet
beta-BHC	C	a	1.8E+00	a	liver	mouse	diet	5.3E-4	a	liver	mouse	oral-diet
Dieldrin	B2	a	1.6E+01	a	liver	mouse	oral-diet	4.6E-3	a	liver	mouse	oral-diet
Endosulfan I												
Endosulfan II												
Endrin Ketone												
gamma-BHC	82-C	b	1.3E+00	b	liver	mouse	oral-diet	3.7E-4	i			
Heptachlor Epoxide	82	a	9.1E+00	a	liver	mouse	oral-diet	2.6E-3	a	liver	mouse	oral-diet
Hexachlorobenzene	B2	a	1.6E+00	a	liver	rat/Sprague-Dawley, female	diet	4.6E-4	a	derived from oral data		
Methoxychlor	D	a										
2,4-DB (2,4-D Butyric Acid)												
2,4-D												
2,4,5-T												
Dicamba												
2,4,5-TP/Silvex	0	a										
Dalapon												
Dichlorprop												
Dinoseb	D	a										
MCPA												
MCPP												
Polychlorinated Biphenyls	82	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1242	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1248	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1254	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1260	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1262	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
Aroclor - 1268	B2	a	2.0E+00	a	liver	rat	oral-diet	1.0E-4	a	liver	rat	oral-diet
2,3,7,8-TCDD	B2	c	1.5E+05	b	respiratory system, liver	rat	oral-diet	3.3E+1	b	respiratory system, liver	rat	oral-diet
Antimony												
Arsenic	A	a	1.5E+00	a	skin	human	oral water	3.0E-3	c	lung	human	inhalation-occupat.
Barium	0	a										
Beryllium	B1	a, j						2.4E-3	a	lung	human	inhalation-occupat.
Cadmium	B1	a, j						1.8E-3	a	lung, trachea	human	inhalation-occupat.
Chromium (total)	D	a						1.2E-2	a,t			
Chromium (III)	D	a										
Copper	D	a										
Cyanide	D	a										
Iron												
Lead	82	a										
Mercury	D	a										
Nickel	A (Nickel Refinery Dust and Nickel Subsulfide)	a						4.8E-4	a,s			
Selenium	D	a										
Silver	D	a										
Thallium												
Vanadium												
Zinc	0	a										

Hierarchy of Sources:
a. US EPA Integrated Risk Information System (IRIS), http://www.epa.gov/IRIS, February, 2016.
b. US EPA, Health Effects Summary Tables (HEAST), Office of Solid Waste and Emergency Response/Office of Emergency and Remedial Response, current as of December 2011.
c. MassDEP 2014 ShortForm (v0414.xlsx).
d. MassDEP, Chemical Health Effects Assessment Methodology and the Method to Derive Allowable Ambient Limits (CHEM/AAL). ORS Report 90-1.
g. MassDEP 2014 ShortForm (v0414.xlsx). This Cancer Slope Factor or Unit Risk for benzo(a)pyrene (from IRIS) has been applied to the seven PAH compounds which are designated as category A, B1, 82 or C carcinogens.
h. Values from IRIS for Chlordane (Technical) were used for alpha-Chlordane.
i. Conversion of the oral Cancer Slope Factor to the inhalation Unit Risk, using the equation: Slope Factor x Ventilation Rate x Constant / Body Weight: (CSF x V x C)/BW = (CSF x 20 m3/day x 0.001 mg/µg) / 70 kg
j. Beryllium and cadmium are B1 carcinogens by the inhalation route only. CSFs are not applicable.
k. US EPA Provisional Peer Reviewed Toxicity Values for Superfund (PPRTV). Current as of February, 2016.
o. CalEPA. Hot Spots Unit Risk and Cancer Potency Values published by the Office of Environmental Health Hazard Assessment (updated 2011).
s. The inhalation unit risk value for nickel subsulfide was used.
t. Value for hexavalent chromium (CrVI).

Notes:

1. Weight of evidence classification:
   - A: Human carcinogen
   - 8: Probable human carcinogen
     - B1: Limited evidence of carcinogenicity in humans from epidemiological studies
     - 82: Sufficient evidence of carcinogenicity in animals, inadequate evidence in humans
   - C: Possible human carcinogen
   - D: Not classified
   - E: No evidence of carcinogenicity

2. Inhalation unit risk is defined as the risk per concentration unit in air, e.g. risk per µg/m^3.

3. Blank space indicates no data available.

Abbreviations:
COC = constituent of concern; CSF = cancer slope factor.

ATTACHMENT I

RISK LIMITATIONS

DRAFT

DRAFT

USE OF REPORT

1. GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of the Client for the stated purpose(s) and location(s) identified in the Report. Use of this Report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

STANDARD OF CARE

2. Our findings and conclusions are based on the work conducted as part of the Scope of Services set forth in the Report and/or proposal, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. Conditions other than described in this report may be found at the subject location(s).

3. The interpretations and conclusions presented in the Report were based solely upon the services described therein, and not on scientific tasks or procedures beyond the scope of described services. The work described in this report was carried out in accordance with the agreed upon Terms and Conditions.

4. GZA's risk characterization was performed in accordance with generally accepted practices of qualified professionals performing the same type of services at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made. The findings of the risk characterization are dependent on numerous assumptions and uncertainties inherent in the risk assessment process. Sources of uncertainty may include the description of site conditions, the nature and extent of chemical distribution and the reliability of toxicity information. Consequently, the findings of the risk characterization are not an absolute characterization of actual risks, but rather serve to highlight potential sources of risk at the site. Although the range of uncertainties has not been quantified, the use of conservative assumptions and parameters throughout the assessment would be expected to err on the side of protection of human health and the environment.

RELIANCE ON INFORMATION FROM OTHERS

5. In conducting our work, GZA has relied upon certain information made available by public agencies, Client and/or others. GZA did not attempt to independently verify the accuracy or completeness of that information. Any inconsistencies in this information which we have noted are discussed in the Report.

ADDITIONAL INFORMATION

6. In the event that the Client, or others authorized to use this Report, obtain information on environmental or hazardous waste issues at the site not contained in this report, such information shall be brought to GZA's attention forthwith. GZA will evaluate such information and, on the basis of this evaluation, may modify the conclusions stated in this report.

COMPLIANCE WITH CODES AND REGULATIONS

7. We used reasonable care in identifying and interpreting applicable codes and regulations necessary to execute our scope of work. These codes and regulations are subject to various, and possibly contradictory, interpretations. Interpretations with codes and regulations by other parties are beyond our control.

ATTACHMENT II

MODELING AMBIENT AIR CONCENTRATIONS

DRAFT

1.0 INTRODUCTION

A combination of two exposure models was used to estimate exposure point concentrations of volatile constituents in groundwater which may accumulate and volatilize into a construction/utility trench. A conservative screening-level model (RTI Model; USEPA, 1990) describing simple mass transfer of volatile constituents from liquid surfaces to air was used in this analysis. The RTI model predicts mass emission rates (mass/time) based on an individual constituent's overall mass transfer coefficient, the area of the liquid surface, and the concentration of the constituent in the liquid phase. The overall mass transfer coefficient was based on an estimation technique presented in Lyman (1982).

The constituent-specific flux rate was then entered into a simple one-box mass balance model which integrates the effects of air movement through the trench. This model estimates the concentration of a constituent in air (mg of compound per m^3 of air) which was used as the exposure point concentration in ambient air of a trench for construction/utility workers who may perform excavation activities at the Site. Descriptions of both of these models and associated assumptions are provided below.

2.0 MODEL FOR VOLATILE CONSTITUENT MASS EMISSION RATE

The RTI model was developed for assessing volatile emissions from aerated and non-aerated lagoons. The model is also applicable to quiescent and turbulent conditions. The model was selected for this analysis due to the similarities between a quiescent lagoon and standing water in the bottom of a trench. This model, which predicts a mass emission rate, is based on the constituent concentration in the liquid phase (groundwater seeping into a trench), the area of the trench, and the overall mass transfer coefficient of each volatile constituent.

The RTI Model is summarized as follows:

$$E = K \times SA \times C$$

where,

E = Mass emission rate of constituent in air phase (g/sec)
K = Overall mass transfer coefficient (m/sec)
SA = Liquid surface area (m^2)
C = Concentration of constituent in liquid phase (g/m^3 or equivalently, mg/l)

The overall mass transfer coefficient, K (m/hr), is related to the liquid-phase exchange coefficient, K_L (m/hr), and the gas-phase exchange coefficient, K_g (m/hr), as follows:

$$\frac{1}{K} = \frac{1}{K_L} + \frac{R \times T}{H \times K_g}$$

where,

R = Universal gas constant, 8.206×10^{-5} (m^3-atm/mol-°K)
T = Temperature (298°K)
H = Henry's Law Constant (m^3-atm/mol)

For the calculation of E, K is converted from units of m/hr to m/sec with a conversion factor of 1 hour per 3,600 seconds.

The overall mass transfer coefficient can be determined from experiment or from knowledge of the liquid- and gas-phase exchange coefficients. Model calculations may also be performed relating these coefficients to physical properties such as the molecular weight and scaling based upon mass-transfer coefficients for other compounds. One set of such relationships, presented in Lyman (1981), is given by:

DRAFT

$$K_L = 20 \times (44/M)^{½} \times CF \text{ (m/hr)}$$

where,

K_L = Liquid-phase exchange coefficient (m/hr)
20 = Liquid-phase exchange coefficient of CO_2 (cm/hr)
44 = Molecular weight of CO_2 (g/mole)
M = Molecular weight of chemical of interest (g/mole)
CF = Units conversion factor (1 m per 100 cm)

and:

$$K_g = 3{,}000 \times (18/M)^{½} \times CF \text{ (m/hr)}$$

where,

K_g = Gas-phase exchange coefficient (m/hr)
3,000 = Gas-phase exchange coefficient for H_2O (cm/hr)
18 = Molecular weight of H_2O (g/mole)
M = Molecular weight of chemical of interest (g/mole)
CF = Units conversion factor (1 m per 100 cm)

The overall mass transfer coefficients and mass emission rates are presented in Table II-1.

3.0 MODEL FOR ESTIMATING AIR CONCENTRATIONS

To estimate the concentration of constituents in a utility trench, GZA used a simple one-box mass balance model. This model assumes that emissions from pooled groundwater in the trench are diluted into air passing through the excavation. The parameters used to calculate the volume of air flowing through the trench and thus the volume into which the emissions are diluted include: the windspeed, which was assumed to be 5.6 meters per second (mean wind speed for Boston, MA) (GRI, 1988) the width of the excavation, which was assumed to be 1 meter (or 3.3 feet), and the depth of the excavation which was assumed to be 1.5 meters (or 5 feet). Concentrations of volatile organic compounds, the oil or hazardous material (OHM) of concern in air, were estimated as follows:

$$EPC_{air} = \frac{E}{Q} \times \frac{1}{A} \times CF$$

Where,

EPC_{air} = Concentration of constituent in air (mg/m^3)
E = Mass emission rate of constituents (g/s) (as estimated in Section 2.00 of this Attachment)
Q = Windspeed of air moving through trench (m/s)
A = Cross-sectional area of trench (m^2)
CF = Units conversion factor (1000 mg per g)

The results of the mass emission rate modeling including derivation of mass transfer coefficients, chemical-specific volatilization rates, and estimated trench air concentrations are presented in Table II-1.

REFERENCES

Gas Research Institute (GRI), Management of Manufactured Gas Plant Sites, Volume III (Risk Assessment), Appendix B, May 1988.

DRAFT

Lyman, W.J., et.al, 1982, Handbook of Chemical Property Estimation Methods, American Chemical Society, Washington, D.C.

U.S. EPA, Office of Air Quality, “Estimation of Baseline Air Emissions at Superfund Sites,” Report ASF-2a, August 1990.

J:\170,000-179,999\171521\171521-10.DEL\RAM Plan - Pre-Construction\App J - Risk Tables\171521.15 (II) Trench_Model_GW.doc

DRAFT

TABLE II-1
ESTIMATION OF AMBIENT AIR CONCENTRATIONS - UTILITY TRENCH EXCAVATION
1 Horizon Way
Everett, Massachusetts

DRAFT

Constituent [1]	C	5A [3]	Trench Dimensions [4]		Receptor	H [5]	M [5]	kg [6]	kl [7]	K [8]	E [9]	Q [10]	A [11]	Estimated [12] Ambient Air Conc. (mg/m³)
	Groundwater Concentration [2] (mg/L)	Liquid Surface Area (m²)	(L) Length (m)	(W) Width (m)	Height (D) (m)	Henry's Law Constant (m³-atm/mol-K)	Molecular Weight (g/mole)	Phase Exchange Coefficient - Gas (m/hr)	Phase Exchange Coefficient - Liquid (m/hr)	Overall Mass Transfer Coefficient (m/sec)	Emission Rate (g/s)	Wind Speed (m/s)	Cross-sectional Area of Air Flow (m²)	
1,1,1-Trichloroethane	1.5E-03	3.0	12.2	1.0	1.5	1.7E-02	133	1.1E+01	1.2E-01	3.1E-05	1.4E-07	5.6	1.5	1.6E-05
Acetone	1.4E-02	3.0	12.2	1.0	1.5	4.0E-05	58	1.7E+01	1.7E-01	6.5E-06	2.8E-07	5.6	1.5	3.3E-05
Benzene	3.4E-03	3.0	12.2	1.0	1.5	5.6E-03	78	1.4E+01	1.5E-01	4.0E-05	4.1E-07	5.6	1.5	4.8E-05
Carbon Disulfide	1.2E-02	3.0	12.2	1.0	1.5	1.3E-02	76	1.5E+01	1.5E-01	4.1E-05	1.5E-06	5.6	1.5	1.8E-04
Ethylbenzene	4.0E-03	3.0	12.2	1.0	1.5	7.9E-03	106	1.2E+01	1.3E-01	3.5E-05	4.3E-07	5.6	1.5	5.0E-05
Methyl-Tert-Butyl-Ether	1.1E-03	3.0	12.2	1.0	1.5	5.9E-04	88	1.4E+01	1.4E-01	2.7E-05	9.3E-08	5.6	1.5	1.1E-05
Naphthalene	8.2E-03	3.0	12.2	1.0	1.5	4.4E-04	128	1.1E+01	1.2E-01	2.1E-05	5.2E-07	5.6	1.5	6.1E-05
Toluene	3.5E-03	3.0	12.2	1.0	1.5	6.6E-03	92	1.3E+01	1.4E-01	3.7E-05	4.0E-07	5.6	1.5	4.6E-05
Xylene (Total)	5.2E-03	3.0	12.2	1.0	1.5	6.6E-03	106	1.2E+01	1.3E-01	3.4E-05	5.5E-07	5.6	1.5	6.4E-05
1-Methylnaphthalene	9.3E-03	3.0	12.2	1.0	1.5	5.1E-04	142	1.1E+01	1.1E-01	2.1E-05	5.8E-07	5.6	1.5	6.8E-05
2-Methylnaphthalene	1.9E-03	3.0	12.2	1.0	1.5	5.2E-04	142	1.1E+01	1.1E-01	2.1E-05	1.2E-07	5.6	1.5	1.4E-05
4-Methylphenol	9.5E-03	3.0	12.2	1.0	1.5	1.0E-06	108	NVOC	NVOC	NC	NC	5.6	1.5	NC
Acenaphthene	2.3E-03	3.0	12.2	1.0	1.5	1.8E-04	154	1.0E+01	1.1E-01	1.2E-05	8.6E-08	5.6	1.5	1.0E-05
Acenaphthylene	5.3E-04	3.0	12.2	1.0	1.5	1.1E-04	154	1.0E+01	1.1E-01	9.2E-06	1.5E-08	5.6	1.5	1.7E-06
Anthracene	1.0E-03	3.0	12.2	1.0	1.5	5.6E-05	178	9.5E+00	9.9E-02	4.9E-06	1.5E-08	5.6	1.5	1.8E-06
Benzo(a)Anthracene	9.1E-04	3.0	12.2	1.0	1.5	1.2E-05	228	8.4E+00	8.8E-02	1.1E-06	3.1E-09	5.6	1.5	3.6E-07
Benzo(a)Pyrene	8.3E-04	3.0	12.2	1.0	1.5	4.6E-07	252	NVOC	NVOC	NC	NC	5.6	1.5	NC
Benzo(b)Fluoranthene	8.7E-04	3.0	12.2	1.0	1.5	6.6E-07	252	NVOC	NVOC	NC	NC	5.6	1.5	NC
Benzo(g,h,i)Perylene	6.3E-04	3.0	12.2	1.0	1.5	3.3E-07	276	NVOC	NVOC	NC	NC	5.6	1.5	NC
Benzo(k)Fluoranthene	8.5E-04	3.0	12.2	1.0	1.5	5.8E-07	252	NVOC	NVOC	NC	NC	5.6	1.5	NC
Chrysene	9.4E-04	3.0	12.2	1.0	1.5	5.2E-06	228	NVOC	NVOC	NC	NC	5.6	1.5	NC
Dibenzo(a,h)anthracene	5.8E-04	3.0	12.2	1.0	1.5	1.2E-07	278	NVOC	NVOC	NC	NC	5.6	1.5	NC
Dibenzofuran	1.6E-03	3.0	12.2	1.0	1.5	1.3E-05	168	9.8E+00	1.0E-01	1.3E-06	6.4E-09	5.6	1.5	7.5E-07
Fluoranthene	1.3E-03	3.0	12.2	1.0	1.5	8.9E-06	202	NVOC	NVOC	NC	NC	5.6	1.5	NC
Fluorene	1.3E-03	3.0	12.2	1.0	1.5	9.6E-05	166	9.9E+00	1.0E-01	7.8E-06	3.2E-08	5.6	1.5	3.7E-06
Indeno(1,2,3-cd)Pyrene	6.1E-04	3.0	12.2	1.0	1.5	3.5E-07	276	NVOC	NVOC	NC	NC	5.6	1.5	NC
Phenanthrene	2.0E-03	3.0	12.2	1.0	1.5	4.2E-05	178	9.5E+00	9.9E-02	3.9E-06	2.4E-08	5.6	1.5	2.8E-06
Phenol	2.9E-03	3.0	12.2	1.0	1.5	3.3E-07	94	NVOC	NVOC	NC	NC	5.6	1.5	NC
Pyrene	1.1E-03	3.0	12.2	1.0	1.5	1.2E-05	202	9.0E+00	9.3E-02	1.2E-06	3.9E-09	5.6	1.5	4.6E-07
C11-C22 Aromatic Fraction	1.0E-01	3.0	12.2	1.0	1.5	7.2E-04	150	1.0E+01	1.1E-01	2.2E-05	7.1E-06	5.6	1.5	8.3E-04
C19-C36 Aliphatic Fraction	1.6E-01	3.0	12.2	1.0	1.5	NA	NA	NC	NC	NC	NC	5.6	1.5	NC
C5-C8 Aliphatic Fraction	7.6E-02	3.0	12.2	1.0	1.5	1.3E+00	93	1.3E+01	1.4E-01	3.8E-05	8.9E-06	5.6	1.5	1.0E-03
C9-C10 Aromatic Fraction	2.5E-01	3.0	12.2	1.0	1.5	7.9E-03	120	1.2E+01	1.2E-01	3.3E-05	2.5E-05	5.6	1.5	2.9E-03
C9-C18 Aliphatic Fraction	4.0E-01	3.0	12.2	1.0	1.5	1.7E+00	170	9.8E+00	1.0E-01	2.8E-05	3.4E-05	5.6	1.5	4.0E-03
Antimony	3.5E-03	3.0	12.2	1.0	1.5	NVOC	122	NVOC	NVOC	NC	NC	5.6	1.5	NC
Arsenic	6.7E-01	3.0	12.2	1.0	1.5	NVOC	75	NVOC	NVOC	NC	NC	5.6	1.5	NC
Barium	4.6E-02	3.0	12.2	1.0	1.5	NVOC	137	NVOC	NVOC	NC	NC	5.6	1.5	NC
Beryllium	2.7E-03	3.0	12.2	1.0	1.5	NVOC	9	NVOC	NVOC	NC	NC	5.6	1.5	NC
Cadmium	5.9E-03	3.0	12.2	1.0	1.5	NVOC	112	NVOC	NVOC	NC	NC	5.6	1.5	NC
Chromium (total)	7.5E-03	3.0	12.2	1.0	1.5	NVOC	52	NVOC	NVOC	NC	NC	5.6	1.5	NC
Copper	4.5E-02	3.0	12.2	1.0	1.5	NVOC	64	NVOC	NVOC	NC	NC	5.6	1.5	NC
Cyanide	3.2E-02	3.0	12.2	1.0	1.5	2.4E-02	27	2.4E+01	2.6E-01	7.0E-05	6.8E-06	5.6	1.5	8.0E-04
Lead	5.0E-02	3.0	12.2	1.0	1.5	NVOC	207	NVOC	NVOC	NC	NC	5.6	1.5	NC
Mercury	1.4E-04	3.0	12.2	1.0	1.5	NVOC	201	NVOC	NVOC	NC	NC	5.6	1.5	NC
Nickel	3.5E-02	3.0	12.2	1.0	1.5	NVOC	59	NVOC	NVOC	NC	NC	5.6	1.5	NC
Selenium	5.7E-03	3.0	12.2	1.0	1.5	NVOC	79	NVOC	NVOC	NC	NC	5.6	1.5	NC
Thallium	2.6E-03	3.0	12.2	1.0	1.5	NVOC	204	NVOC	NVOC	NC	NC	5.6	1.5	NC
Vanadium	6.4E-02	3.0	12.2	1.0	1.5	NVOC	51	NVOC	NVOC	NC	NC	5.6	1.5	NC
Zinc	2.2E-01	3.0	12.2	1.0	1.5	NVOC	65	NVOC	NVOC	NC	NC	5.6	1.5	NC

Notes

1. All groundwater COCs considered "volatile" in accordance with the USEPA (2015) OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air were evaluated as COCs in ambient air in a trench. According to the USEPA (2015) guide, "a chemical generally is considered to be 'volatile' if 1) Vapor pressure is greater than 1 millimeter of mercury (mmHg), or 2) Henry's law constant (ratio of a chemical's vapor pressure in air to solubility in water) is greater than 10^{-5} atmosphere-meter cubed per mole (atm m^3 mol^{-1})"
2. Groundwater concentration is based on the arithmetic mean concentrations of VOCs detected in groundwater samples collected from the Site.
3. Liquid surface area was calculated as the length of the trench times the width of the trench. Although GZA assumed that no more than 10 percent of the trench will contain some standing water, GZA has assumed 25 percent to account for volatilization from two other transport mechanisms (i.e., from groundwater to soil gas to air and from soil to air). Therefore, a factor of 0.25 was applied to the liquid surface area. 5A = (length * width) * 0.25
4. Repairs will be the predominant type of utility work at the Site. GZA assumed that 40 feet or 12.2 meters of an existing water, gas, or drain line may be accessed for repairs. To calculate the liquid surface area, the width of the trench was assumed to be 3 feet or 1 meter.
5. Constituent-specific values were obtained from MassDEP (2013) Shortforms for Human Health Risk Assessment under the MCP. For compounds not listed in the MassDEP documentations, values from USEPA's Johnson and Ettinger (1991) Model for Subsurface Vapor Intrusion into Buildings (GW-ADV-Feb04.xls), February, 2004 and other references were used.
6. Phase Exchange coefficient (gas) = [3000 * sqrt(18/mol wt)]/100
7. Phase Exchange coefficient (liquid) = [20 * sqrt (44/mol wt)] / 100
8. Mass Transfer coefficient = 1/kl + [(8.2E-5 * 298)/(H * kg)]
9. Emission Rate = C_{gw} * 5A * K
10. Windspeed was based on Gas Research Institute (GRI) Management of Manufactured Gas Plant Sites, Volume III (Risk Assessment), Appendix B. The mean wind speed for Boston, Massachusetts of 5.6 m/s was used.
11. The cross-sectional area is based on the trench dimensions above and height of receptor. Therefore, the cross-sectional area was calculated as (W x D) or 1 meter x 1.5 meters = 1.5 square meters.
12. Estimated Ambient Air Concentration = [E/Q * 1/A] * 1000
13. US EPA Office of Water Quality Planning and Standards, Hazardous Waste Treatment, Storage, and Disposal Facilities (TSDF) Air Emissions Models, July 1990.

NA = Not Available; NC = Not Calculated; NVOC = Not a Volatile Organic Compound.

DRAFT

ATTACHMENT III

RISK CALCULATIONS

The methodology used to calculate hazard quotients (HQs) and Excess Lifetime Cancer Risks (ELCRs) is described below. Tables III-1 through III-9 present risks by exposure pathway for each receptor group evaluated.

To evaluate non-cancer risks, an HQ is calculated. The HQ, a ratio of the receptor's quantified exposure to the "acceptable" level of exposure, provides a general indication of whether exposures are likely to result in adverse health effects, but does not represent the severity of effects associated with an exposure. To evaluate the non-cancer effects for each COC, the estimated average daily dose (ADD) or average daily exposure (ADE) is divided by the appropriate reference dose (RfD) or reference concentration (RfC) to yield an HQ:

$$HQ_{oral} \text{ or } HQ_{dermal} = \text{ADD (mg/kg-day)/RfD (mg/kg-day)}$$

$$HQ_{inhalation} = \text{ADE } (\text{mg/m}^3)/\text{RfC } (\text{mg/m}^3)$$

For multiple constituent exposures, HQs are summed for all COCs to yield a Hazard Index (HI) for an individual exposure pathway. A cumulative HI is derived by summing the HIs for each exposure pathway for each receptor. A cumulative HI equal to or less than 1, the Cumulative Non-cancer Risk Limit, indicates that a receptor's exposure is equal to or less than the "acceptable" exposure level and it is considered unlikely that adverse health effects would occur. However, a cumulative HI greater than 1 does not imply that health impacts would necessarily be expected. The appropriateness of the exposure assumptions and the basis of the toxicity values used in calculation of the HI must also be considered. This approach assumes that toxic effects by different constituents are additive.

DRAFT

Cancer risks were evaluated as probabilities. The ELCR estimate is considered to be an upper bound probability of the likelihood of developing cancer over a lifetime as a result of exposure to individual constituents. To assess excess lifetime cancer risks, the lifetime average daily doses (LADDs) or lifetime average daily exposures (LADEs) are multiplied by their respective cancer slope factors (CSFs) or unit risks to yield a COC-specific lifetime cancer risk estimate:

$$ELCR_{oral} \text{ or } ELCR_{dermal} = \text{LADD (mg/kg-day) x CSF } (\text{mg/kg-day})^{-1}$$

$$ELCR_{inhalation} = \text{LADE } (\mu\text{g/m}^3) \text{ x unit risk } (\mu\text{g/m}^3)^{-1}$$

For multiple constituent exposures, COC-specific cancer risk estimates for specific exposure pathways are summed to yield a pathway-specific cancer risk estimate. A cumulative receptor cancer risk is calculated by summing pathway-specific ELCRs. The summation assumes that individual intakes are small. It also assumes independence of action by the constituents involved (i.e., there are no synergistic or antagonistic interactions, and all constituents have the same toxicological mechanism and endpoint).

The calculated cumulative receptor cancer risk estimates are compared to the Cumulative Cancer Risk Limit of 1 ☐10^{-5} specified in the MCP. This level represents an incremental probability of one in 100,000 that an individual may develop cancer over his or her lifetime due to exposures to COCs at the Site.

TABLE III-1
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR DERMAL CONTACT WITH SOIL

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

Dermal Contact with Soil

See TABLE H-13 for Exposure Variables and Rationale

$$ADD_{soil\text{-}dermal} = \frac{EPC_{soil} * DCR_{soil} * EF * ED * EP * RAF_{dermal\text{-}nc} * C1}{BW * AP_{nc}}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$$HQ_{soil\text{-}dermal} = \frac{ADD_{soil\text{-}dermal}}{RfD}$$

$$HI_{soil\text{-}dermal} = S\ HQ_{soil\text{-}dermal}$$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{dermal\text{-}nc}$ (unitless)	$ADD_{soil\text{-}dermal}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{soil\text{-}dermal}$ (unitless)
1,1,1-Trichloroethane	0.0036	0.03	1.3E-09	7.0E+00	1.9E-10
1,1-Dichloroethane	0.0036	0.03	1.3E-09	2.0E+00	6.6E-10
1,2,3-Trichlorobenzene	0.031	1	3.8E-07	8.0E-03	4.8E-05
1,2,4-Trichlorobenzene	0.33	0.03	1.2E-07	9.0E-02	1.3E-06
1,2-Dichlorobenzene	0.0095	0.03	3.5E-09	9.0E-01	3.9E-09
1,2-Dichloroethane	0.011	0.03	4.1E-09	2.0E-02	2.1E-07
1,3-Dichlorobenzene	0.0096	0.03	3.5E-09	9.0E-01	3.9E-09
1,4-Dichlorobenzene	0.011	0.03	3.9E-09	9.0E-01	4.3E-09
2-Butanone	0.030	0.03	1.1E-08	6.0E-01	1.8E-08
2-Chlorotoluene	0.0032	1	4.0E-08	2.0E-01	2.0E-07
Acetone	0.090	0.03	3.3E-08	2.7E+00	1.2E-08
Benzene	0.0092	0.03	3.4E-09	1.0E-02	3.4E-07
Carbon Disulfide	0.026	0.12	3.8E-08	1.0E-01	3.8E-07
Chlorobenzene	0.0032	0.03	1.2E-09	7.0E-02	1.7E-08
Chloroform	0.0064	0.03	2.3E-09	1.0E-02	2.3E-07
cis-1,2-Dichloroethene	0.0042	0.03	1.6E-09	2.0E-02	7.8E-08
Diethylether	0.0034	1	4.2E-08	2.0E+00	2.1E-08
Ethylbenzene	0.018	0.03	6.5E-09	5.0E-02	1.3E-07
Methylene Chloride	0.017	0.03	6.1E-09	6.0E-03	1.0E-06
Naphthalene	0.87	0.1	1.1E-06	2.0E-01	5.3E-06
Tetrachloroethene	0.0032	0.03	1.2E-09	6.0E-03	2.0E-07
Toluene	0.016	0.03	5.7E-09	8.0E-01	7.1E-09
Trichloroethene	0.011	0.03	4.2E-09	5.0E-04	8.4E-06
Vinyl Chloride	0.0059	0.03	2.2E-09	3.0E-03	7.2E-07
Xylene (Total)	0.038	0.03	1.4E-08	4.0E-01	3.5E-08
Styrene	0.0043	0.03	1.6E-09	2.0E+00	7.9E-10
1,2-Dichloropropane	0.0033	0.03	1.2E-09	NA	NC
1,2,3-Trichloropropane	0.0032	0.11	4.4E-09	8.0E-02	5.5E-08
1,4-Dioxane	0.12	0.03	4.3E-08	3.0E-02	1.4E-06
2,4-Dimethylphenol	0.67	0.3	2.4E-06	5.0E-02	4.9E-05
1-Methylnaphthalene	2.6	0.1	3.2E-06	7.0E-03	4.6E-04
2-Methylnaphthalene	0.96	0.1	1.2E-06	4.0E-03	2.9E-04
2-Methylphenol	0.66	0.18	1.5E-06	5.0E-01	2.9E-06
4-Methylphenol	1.5	0.18	3.4E-06	5.0E-03	6.8E-04
Acenaphthene	1.2	0.1	1.5E-06	2.0E-01	7.3E-06
Acenaphthylene	0.78	0.1	9.6E-07	3.0E-01	3.2E-06
Anthracene	1.9	0.1	2.3E-06	1.0E+00	2.3E-06
Benzo(a)Anthracene	2.6	0.02	6.3E-07	3.0E-01	2.1E-06
Benzo(a)Pyrene	1.9	0.02	4.6E-07	3.0E-01	1.5E-06
Benzo(e)Pyrene	2.8	1	3.4E-05	NA	NC
Benzo(b)Fluoranthene	2.3	0.02	5.6E-07	3.0E-01	1.9E-06
Benzo(g,h,i)Perylene	1.1	0.1	1.3E-06	3.0E-01	4.3E-06
Benzo(k)Fluoranthene	1.5	0.02	3.7E-07	3.0E-01	1.2E-06
Bis(2-Ethylhexyl)phthalate	717	0.1	8.8E-04	2.0E-02	4.4E-02
Butylbenzylphthalate	0.68	0.18	1.5E-06	2.0E+00	7.5E-07
Chrysene	2.2	0.02	5.3E-07	3.0E-01	1.8E-06
Dibenzo(a,h)anthracene	0.54	0.02	1.3E-07	3.0E-01	4.4E-07
Dibenzofuran	1.0	0.18	2.2E-06	4.0E-03	5.6E-04
Di-n-butylphthalate	0.66	0.18	1.5E-06	1.0E+00	1.5E-06
Fluoranthene	5.4	0.1	6.6E-06	4.0E-01	1.6E-05
Fluorene	1.3	0.1	1.6E-06	4.0E-01	4.0E-06
Indeno(1,2,3-cd)Pyrene	1.1	0.02	2.7E-07	3.0E-01	8.9E-07
Phenanthrene	5.3	0.1	6.5E-06	3.0E-01	2.2E-05
Phenol	0.99	0.3	3.6E-06	3.0E-01	1.2E-05
Pyrene	4.2	0.1	5.2E-06	3.0E-01	1.7E-05
bis(2-Chloroethoxy)methane	0.67	1	8.2E-06	3.0E-02	2.7E-04
Pentachlorophenol	2.7	0.3	9.9E-06	5.0E-03	2.0E-03
3,3 Dichlorobenzidine	1.3	0.1	1.6E-06	NA	NC
C11-C22 Aromatic Fraction	454	0.1	5.6E-04	3.0E-01	1.9E-03
C19-C36 Aliphatic Fraction	665	0.2	1.6E-03	6.0E+00	2.7E-04
C5-C8 Aliphatic Fraction	11	0.1	1.3E-05	4.0E-01	3.4E-05
C9-C10 Aromatic Fraction	26	0.2	6.3E-05	3.0E-01	2.1E-04
C9-C18 Aliphatic Fraction	68	0.2	1.7E-04	1.0E+00	1.7E-04
4,4'-DDD	0.0045	0.03	1.7E-09	5.0E-04	3.3E-06
4,4'-DDE	0.0052	0.03	1.9E-09	5.0E-04	3.8E-06
4,4'-DDT	0.016	0.03	5.9E-09	5.0E-04	1.2E-05
alpha-BHC	0.0045	0.04	2.2E-09	3.0E-03	7.3E-07
beta-BHC	0.0045	0.04	2.2E-09	3.0E-03	7.3E-07
Dieldrin	0.013	0.1	1.6E-08	5.0E-05	3.1E-04
Endrin Ketone	0.0046	0.1	5.6E-09	3.0E-04	1.9E-05
gamma-BHC	0.0045	0.04	2.2E-09	3.0E-03	7.3E-07
Heptachlor Epoxide	0.0065	0.1	8.0E-09	1.3E-05	6.1E-04
Hexachlorobenzene	0.0047	0.13	7.5E-09	1.0E-05	7.5E-04
Methoxychlor	0.0064	0.1	7.8E-09	5.0E-03	1.6E-06
2,4-D	0.14	0.18	3.0E-07	1.0E-02	3.0E-05
2,4,5-T	0.058	0.18	1.3E-07	1.0E-01	1.3E-06
Dicamba	0.068	0.19	1.6E-07	3.0E-02	5.2E-06
Aroclor - 1242	0.24	0.1	2.9E-07	5.0E-05	5.8E-03
Aroclor - 1248	0.23	0.1	2.8E-07	5.0E-05	5.6E-03
Aroclor - 1254	0.57	0.1	7.0E-07	5.0E-05	1.4E-02
Aroclor - 1260	3.3	0.1	4.0E-06	5.0E-05	8.1E-02
Aroclor - 1262	0.22	0.1	2.7E-07	5.0E-05	5.4E-03
Aroclor - 1268	0.21	0.1	2.6E-07	5.0E-05	5.2E-03
Antimony	5.0	0.1	6.1E-06	4.0E-04	1.5E-02
Arsenic	53	0.03	2.0E-05	3.0E-04	6.5E-02
Barium	74	0.1	9.0E-05	7.0E-02	1.3E-03
Beryllium	0.24	0.1	3.0E-07	5.0E-03	5.9E-05
Cadmium	1.8	0.01	2.2E-07	1.0E-03	2.2E-04
Chromium (total)	27	0.1	3.3E-05	2.0E-02	1.7E-03
Copper	1010	0.05	6.7E-04	3.7E-02	1.8E-02
Cyanide	1.3	0.1	1.6E-06	6.0E-03	2.6E-04
Iron	81800	0.05	5.5E-02	7.0E-01	7.8E-02
Lead	773	0.006	5.7E-05	7.5E-04	7.6E-02
Mercury	2.7	0.1	3.3E-06	3.0E-04	1.1E-02
Nickel	23	0.2	5.6E-05	2.0E-02	2.8E-03
Selenium	9.8	0.01	1.2E-06	5.0E-03	2.4E-04
Silver	1.7	0.3	6.1E-06	5.0E-03	1.2E-03
Thallium	3.1	0.01	3.8E-07	8.0E-04	4.8E-04
Vanadium	48	0.1	5.9E-05	9.0E-03	6.6E-03
Zinc	249	0.1	3.0E-04	3.0E-01	1.0E-03
				$HI_{soil\text{-}dermal}$ =	**4.5E-01**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE III-1 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR DERMAL CONTACT WITH SOIL

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

Dermal Contact with Soil

See TABLE H-13 for Exposure Variables and Rationale

$$LADD_{soil-dermal} = \frac{EPC_{soil} * DCR_{soil} * EF * ED * EP * RAF_{dermal-c} * C1}{BW * AP_c}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$ELCR_{soil-dermal} = LADD_{soil-dermal} * CSF$ Total $ELCR_{soil-dermal} = S\ ELCR_{soil-dermal}$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{dermal-c}$ (unitless)	$LADD_{soil-dermal}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{soil-dermal}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	3.16E-10	NA	NC
1,1-Dichloroethane	0.0036	1	3.16E-10	NA	NC
1,2,3-Trichlorobenzene	0.031	1	2.71E-09	NA	NC
1,2,4-Trichlorobenzene	0.33	1	2.86E-08	2.9E-02	8.3E-10
1,2-Dichlorobenzene	0.0095	1	8.33E-10	NA	NC
1,2-Dichloroethane	0.011	0.03	2.93E-11	9.1E-02	2.7E-12
1,3-Dichlorobenzene	0.0096	1	8.35E-10	NA	NC
1,4-Dichlorobenzene	0.011	0.03	2.79E-11	2.4E-02	6.7E-13
2-Butanone	0.030	1	2.61E-09	NA	NC
2-Chlorotoluene	0.0032	1	2.82E-10	NA	NC
Acetone	0.090	1	7.82E-09	NA	NC
Benzene	0.0092	0.03	2.41E-11	5.5E-02	1.3E-12
Carbon Disulfide	0.026	1	2.24E-09	NA	NC
Chlorobenzene	0.0032	1	2.82E-10	NA	NC
Chloroform	0.0064	1	5.58E-10	NA	NC
cis-1,2-Dichloroethene	0.0042	1	3.70E-10	NA	NC
Diethylether	0.0034	1	3.00E-10	NA	NC
Ethylbenzene	0.018	1	1.54E-09	NA	NC
Methylene Chloride	0.017	0.03	4.34E-11	2.0E-03	8.7E-14
Naphthalene	0.87	1	7.60E-08	NA	NC
Tetrachloroethene	0.0032	0.03	8.50E-12	2.0E-02	1.7E-13
Toluene	0.016	1	1.36E-09	NA	NC
Trichloroethene	0.011	0.03	3.00E-11	4.6E-02	1.4E-12
Vinyl Chloride	0.0059	0.03	1.54E-11	1.4E+00	2.2E-11
Xylene (Total)	0.038	1	3.29E-09	NA	NC
Styrene	0.0043	0.03	1.13E-11	3.0E-02	3.4E-13
1,2-Dichloropropane	0.0033	0.03	8.77E-12	6.8E-02	6.0E-13
1,2,3-Trichloropropane	0.0032	0.11	3.11E-11	3.0E+01	9.3E-10
1,4-Dioxane	0.12	0.03	3.05E-10	1.0E-01	3.0E-11
2,4-Dimethylphenol	0.67	1	5.81E-08	NA	NC
1-Methylnaphthalene	2.6	1	2.30E-07	2.9E-02	6.7E-09
2-Methylnaphthalene	0.96	1	8.39E-08	NA	NC
2-Methylphenol	0.66	1	5.78E-08	NA	NC
4-Methylphenol	1.5	1	1.34E-07	NA	NC
Acenaphthene	1.2	1	1.04E-07	NA	NC
Acenaphthylene	0.78	1	6.83E-08	NA	NC
Anthracene	1.9	1	1.67E-07	NA	NC
Benzo(a)Anthracene	2.6	0.02	4.49E-09	7.3E-01	3.3E-09
Benzo(a)Pyrene	1.9	0.02	3.28E-09	7.3E+00	2.4E-08
Benzo(e)Pyrene	2.8	1	2.42E-07	NA	NC
Benzo(b)Fluoranthene	2.3	0.02	4.01E-09	7.3E-01	2.9E-09
Benzo(g,h,i)Perylene	1.1	1	9.24E-08	NA	NC
Benzo(k)Fluoranthene	1.5	0.02	2.64E-09	7.3E-02	1.9E-10
Bis(2-Ethylhexyl)phthalate	717	0.1	6.25E-06	1.4E-02	8.8E-08
Butylbenzylphthalate	0.68	1	5.95E-08	NA	NC
Chrysene	2.2	0.02	3.82E-09	7.3E-02	2.8E-10
Dibenzo(a,h)anthracene	0.54	0.02	9.49E-10	7.3E+00	6.9E-09
Dibenzofuran	1.0	1	8.94E-08	NA	NC
Di-n-butylphthalate	0.66	1	5.79E-08	NA	NC
Fluoranthene	5.4	1	4.71E-07	NA	NC
Fluorene	1.3	1	1.15E-07	NA	NC
Indeno(1,2,3-cd)Pyrene	1.1	0.02	1.91E-09	7.3E-01	1.4E-09
Phenanthrene	5.3	1	4.62E-07	NA	NC
Phenol	0.99	1	8.65E-08	NA	NC
Pyrene	4.2	1	3.69E-07	NA	NC
bis(2-Chloroethoxy)methane	0.67	1	5.85E-08	NA	NC
Pentachlorophenol	2.7	0.3	7.09E-08	4.0E-01	2.8E-08
3,3-Dichlorobenzidine	1.3	0.1	1.14E-08	4.5E-01	5.1E-09
C11-C22 Aromatic Fraction	454	1	3.97E-05	NA	NC
C19-C36 Aliphatic Fraction	665	1	5.80E-05	NA	NC
C5-C8 Aliphatic Fraction	11	1	9.62E-07	NA	NC
C9-C10 Aromatic Fraction	26	1	2.24E-06	NA	NC
C9-C18 Aliphatic Fraction	68	1	5.90E-06	NA	NC
4,4'-DDD	0.0045	0.03	1.19E-11	2.4E-01	2.8E-12
4,4'-DDE	0.0052	0.03	1.36E-11	3.4E-01	4.6E-12
4,4'-DDT	0.016	0.03	4.22E-11	3.4E-01	1.4E-11
alpha-BHC	0.0045	0.04	1.56E-11	6.3E+00	9.9E-11
beta-BHC	0.0045	0.04	1.57E-11	1.8E+00	2.8E-11
Dieldrin	0.013	0.1	1.11E-10	1.6E+01	1.8E-09
Endrin Ketone	0.0046	1	4.01E-10	NA	NC
gamma-BHC	0.0045	0.04	1.56E-11	1.3E+00	2.0E-11
Heptachlor Epoxide	0.0065	0.1	5.69E-11	9.1E+00	5.2E-10
Hexachlorobenzene	0.0047	0.1	4.12E-11	1.6E+00	6.6E-11
Methoxychlor	0.0064	1	5.56E-10	NA	NC
2,4-D	0.14	1	1.21E-08	NA	NC
2,4,5-T	0.058	1	5.10E-09	NA	NC
Dicamba	0.068	1	5.98E-09	NA	NC
Aroclor - 1242	0.24	0.1	2.08E-09	2.0E+00	4.2E-09
Aroclor - 1248	0.23	0.1	1.99E-09	2.0E+00	4.0E-09
Aroclor - 1254	0.57	0.1	4.96E-09	2.0E+00	9.9E-09
Aroclor - 1260	3.3	0.1	2.89E-08	2.0E+00	5.8E-08
Aroclor - 1262	0.22	0.1	1.93E-09	2.0E+00	3.9E-09
Aroclor - 1268	0.21	0.1	1.86E-09	2.0E+00	3.7E-09
Antimony	5.0	1	4.34E-07	NA	NC
Arsenic	53	0.03	1.39E-07	1.5E+00	2.1E-07
Barium	74	1	6.46E-06	NA	NC
Beryllium	0.24	1	2.11E-08	NA	NC
Cadmium	1.8	1	1.58E-07	NA	NC
Chromium (total)	27	1	2.37E-06	NA	NC
Copper	1010	1	8.82E-05	NA	NC
Cyanide	1.3	1	1.13E-07	NA	NC
Iron	81800	1	7.14E-03	NA	NC
Lead	773	1	6.75E-05	NA	NC
Mercury	2.7	1	2.38E-07	NA	NC
Nickel	23	1	1.99E-06	NA	NC
Selenium	9.8	1	8.53E-07	NA	NC
Silver	1.7	1	1.45E-07	NA	NC
Thallium	3.1	1	2.73E-07	NA	NC
Vanadium	48	1	4.22E-06	NA	NC
Zinc	249	1	2.17E-05	NA	NC
				Total $ELCR_{soil-dermal}$:	**4.6E-07**

DRAFT

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

TABLE III-2
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR INCIDENTAL INGESTION OF SOIL

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

DRAFT

Incidental Ingestion of Soil

See TABLE H-13 for Exposure Variables and Rationale

$$ADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$$HQ_{soil\text{-}oral} = \frac{ADD_{soil\text{-}oral}}{RfD} \qquad HI_{soil\text{-}oral} = S\ HQ_{soil\text{-}oral}$$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{soil\text{-}oral}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	4.4E-09	7.0E+00	6.4E-10
1,1-Dichloroethane	0.0036	1	4.4E-09	2.0E+00	2.2E-09
1,2,3-Trichlorobenzene	0.031	1	3.8E-08	8.0E-03	4.8E-06
1,2,4-Trichlorobenzene	0.33	1	4.0E-07	9.0E-02	4.5E-06
1,2-Dichlorobenzene	0.0095	1	1.2E-08	9.0E-01	1.3E-08
1,2-Dichloroethane	0.011	1	1.4E-08	2.0E-02	6.9E-07
1,3-Dichlorobenzene	0.0096	1	1.2E-08	9.0E-01	1.3E-08
1,4-Dichlorobenzene	0.011	1	1.3E-08	9.0E-01	1.5E-08
2-Butanone	0.030	1	3.7E-08	6.0E-01	6.1E-08
2-Chlorotoluene	0.0032	1	4.0E-09	2.0E-01	2.0E-08
Acetone	0.090	1	1.1E-07	2.7E+00	4.1E-08
Benzene	0.0092	1	1.1E-08	1.0E-02	1.1E-06
Carbon Disulfide	0.026	1	3.2E-08	1.0E-01	3.2E-07
Chlorobenzene	0.0032	1	4.0E-09	7.0E-02	5.7E-08
Chloroform	0.0064	1	7.8E-09	1.0E-02	7.8E-07
cis-1,2-Dichloroethene	0.0042	1	5.2E-09	2.0E-02	2.6E-07
Diethylether	0.0034	1	4.2E-09	2.0E+00	2.1E-09
Ethylbenzene	0.018	1	2.2E-08	5.0E-02	4.3E-07
Methylene Chloride	0.017	1	2.0E-08	6.0E-03	3.4E-06
Naphthalene	0.87	0.3	3.2E-07	2.0E-01	1.6E-06
Tetrachloroethene	0.0032	1	4.0E-09	6.0E-03	6.6E-07
Toluene	0.016	1	1.9E-08	8.0E-01	2.4E-08
Trichloroethene	0.011	1	1.4E-08	5.0E-04	2.8E-05
Vinyl Chloride	0.0059	1	7.2E-09	3.0E-03	2.4E-06
Xylene (Total)	0.038	1	4.6E-08	4.0E-01	1.2E-07
Styrene	0.0043	1	5.3E-09	2.0E+00	2.6E-09
1,2-Dichloropropane	0.0033	1	4.1E-09	NA	NC
1,2,3-Trichloropropane	0.0032	1	4.0E-09	8.0E-02	5.0E-08
1,4-Dioxane	0.12	1	1.4E-07	3.0E-02	4.8E-06
2,4-Dimethylphenol	0.67	1	8.2E-07	5.0E-02	1.6E-05
1-Methylnaphthalene	2.6	0.3	9.7E-07	7.0E-03	1.4E-04
2-Methylnaphthalene	0.96	0.3	3.5E-07	4.0E-03	8.9E-05
2-Methylphenol	0.66	1	8.1E-07	5.0E-01	1.6E-06
4-Methylphenol	1.5	1	1.9E-06	5.0E-03	3.8E-04
Acenaphthene	1.2	0.3	4.4E-07	2.0E-01	2.2E-06
Acenaphthylene	0.78	0.3	2.9E-07	3.0E-01	9.6E-07
Anthracene	1.9	0.3	7.1E-07	1.0E+00	7.1E-07
Benzo(a)Anthracene	2.6	0.3	9.5E-07	3.0E-01	3.2E-06
Benzo(a)Pyrene	1.9	0.3	6.9E-07	3.0E-01	2.3E-06
Benzo(e)Pyrene	2.8	1	3.4E-06	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	8.5E-07	3.0E-01	2.8E-06
Benzo(g,h,i)Perylene	1.1	0.3	3.9E-07	3.0E-01	1.3E-06
Benzo(k)Fluoranthene	1.5	0.3	5.6E-07	3.0E-01	1.9E-06
Bis(2-Ethylhexyl)phthalate	717	1	8.8E-04	2.0E-02	4.4E-02
Butylbenzylphthalate	0.68	0.96	8.0E-07	2.0E+00	4.0E-07
Chrysene	2.2	0.3	8.1E-07	3.0E-01	2.7E-06
Dibenzo(a,h)anthracene	0.54	0.3	2.0E-07	3.0E-01	6.7E-07
Dibenzofuran	1.0	1	1.3E-06	4.0E-03	3.1E-04
Di-n-butylphthalate	0.66	0.96	7.8E-07	1.0E+00	7.8E-07
Fluoranthene	5.4	0.3	2.0E-06	4.0E-01	5.0E-06
Fluorene	1.3	0.3	4.9E-07	4.0E-01	1.2E-06
Indeno(1,2,3-cd)Pyrene	1.1	0.3	4.0E-07	3.0E-01	1.3E-06
Phenanthrene	5.3	0.3	2.0E-06	3.0E-01	6.5E-06
Phenol	0.99	1	1.2E-06	3.0E-01	4.1E-06
Pyrene	4.2	0.3	1.6E-06	3.0E-01	5.2E-06
bis(2-Chloroethoxy)methane	0.67	1	8.2E-07	3.0E-02	2.7E-05
Pentachlorophenol	2.7	1	3.3E-06	5.0E-03	6.6E-04
3,3-Dichlorobenzidine	1.3	1	1.6E-06	NA	NC
C11-C22 Aromatic Fraction	454	0.3	1.7E-04	3.0E-01	5.6E-04
C19-C36 Aliphatic Fraction	665	1	8.2E-04	6.0E+00	1.4E-04
C5-C8 Aliphatic Fraction	11	1	1.4E-05	4.0E-01	3.4E-05
C9-C10 Aromatic Fraction	26	1	3.2E-05	3.0E-01	1.1E-04
C9-C18 Aliphatic Fraction	68	1	8.3E-05	1.0E+00	8.3E-05
4,4'-DDD	0.0045	1	5.6E-09	5.0E-04	1.1E-05
4,4'-DDE	0.0052	1	6.4E-09	5.0E-04	1.3E-05
4,4'-DDT	0.016	1	2.0E-08	5.0E-04	4.0E-05
alpha-BHC	0.0045	1	5.5E-09	3.0E-03	1.8E-06
beta-BHC	0.0045	1	5.5E-09	3.0E-03	1.8E-06
Dieldrin	0.013	1	1.6E-08	5.0E-05	3.1E-04
Endrin Ketone	0.0046	1	5.6E-09	3.0E-04	1.9E-05
gamma-BHC	0.0045	1	5.5E-09	3.0E-03	1.8E-06
Heptachlor Epoxide	0.0065	1	8.0E-09	1.3E-05	6.2E-04
Hexachlorobenzene	0.0047	1	5.8E-09	1.0E-05	5.8E-04
Methoxychlor	0.0064	1	7.8E-09	5.0E-03	1.6E-06
2,4-D	0.14	0.96	1.6E-07	1.0E-02	1.6E-05
2,4,5-T	0.058	0.96	6.9E-08	1.0E-01	6.9E-07
Dicamba	0.068	1	8.4E-08	3.0E-02	2.8E-06
Aroclor - 1242	0.24	1	2.9E-07	5.0E-05	5.8E-03
Aroclor - 1248	0.23	1	2.8E-07	5.0E-05	5.6E-03
Aroclor - 1254	0.57	1	7.0E-07	5.0E-05	1.4E-02
Aroclor - 1260	3.3	1	4.1E-06	5.0E-05	8.1E-02
Aroclor - 1262	0.22	1	2.7E-07	5.0E-05	5.4E-03
Aroclor - 1268	0.21	1	2.6E-07	5.0E-05	5.2E-03
Antimony	5.0	1	6.1E-06	4.0E-04	1.5E-02
Arsenic	53	0.5	3.3E-05	3.0E-04	1.1E-01
Barium	74	1	9.1E-05	7.0E-02	1.3E-03
Beryllium	0.24	1	3.0E-07	5.0E-03	5.9E-05
Cadmium	1.8	1	2.2E-06	5.0E-04	4.5E-03
Chromium (total)	27	1	3.3E-05	2.0E-02	1.7E-03
Copper	1010	0.7	8.8E-04	3.7E-02	2.4E-02
Cyanide	1.3	1	1.6E-06	6.0E-03	2.7E-04
Iron	81800	0.7	7.1E-02	7.0E-01	1.0E-01
Lead	773	0.3	2.8E-04	7.5E-04	3.8E-01
Mercury	2.7	0.5	1.7E-06	3.0E-04	5.6E-03
Nickel	23	1	2.8E-05	2.0E-02	1.4E-03
Selenium	9.8	1	1.2E-05	5.0E-03	2.4E-03
Silver	1.7	1	2.0E-06	5.0E-03	4.1E-04
Thallium	3.1	1	3.8E-06	8.0E-04	4.8E-03
Vanadium	48	1	5.9E-05	9.0E-03	6.6E-03
Zinc	249	1	3.1E-04	3.0E-01	1.0E-03
				$HI_{soil\text{-}oral}$ =	**4.8E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

TABLE III-2 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR INCIDENTAL INGESTION OF SOIL
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

Incidental Ingestion of Soil

See TABLE H-13 for Exposure Variables and Rationale

$$LADD_{soil\text{-}oral} = \frac{EPC_{soil} * IR_{soil} * EF * ED * EP * RAF_{oral\text{-}c} * C1}{BW * AP_c}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$ELCR_{soil\text{-}oral} = LADD_{soil\text{-}oral} * CSF$

Total $ELCR_{soil\text{-}oral}$ = S $ELCR_{soil\text{-}oral}$

COC	EPC_{soil} EPC1 (mg/kg)	$RAF_{oral\text{-}c}$ (unitless)	$LADD_{soil\text{-}oral}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{soil\text{-}oral}$ (unitless)
1,1,1-Trichloroethane	0.0036	1	3.18E-11	NA	NC
1,1-Dichloroethane	0.0036	1	3.17E-11	NA	NC
1,2,3-Trichlorobenzene	0.031	1	2.73E-10	NA	NC
1,2,4-Trichlorobenzene	0.33	1	2.88E-09	2.9E-02	8.3E-11
1,2-Dichlorobenzene	0.0095	1	8.37E-11	NA	NC
1,2-Dichloroethane	0.011	1	9.82E-11	9.1E-02	8.9E-12
1,3-Dichlorobenzene	0.0096	1	8.39E-11	NA	NC
1,4-Dichlorobenzene	0.011	1	9.36E-11	2.4E-02	2.2E-12
2-Butanone	0.030	1	2.62E-10	NA	NC
2-Chlorotoluene	0.0032	1	2.84E-11	NA	NC
Acetone	0.090	1	7.86E-10	NA	NC
Benzene	0.0092	1	8.08E-11	5.5E-02	4.4E-12
Carbon Disulfide	0.026	1	2.25E-10	NA	NC
Chlorobenzene	0.0032	1	2.84E-11	NA	NC
Chloroform	0.0064	1	5.61E-11	NA	NC
cis-1,2-Dichloroethene	0.0042	1	3.72E-11	NA	NC
Diethylether	0.0034	1	3.02E-11	NA	NC
Ethylbenzene	0.018	1	1.55E-10	NA	NC
Methylene Chloride	0.017	1	1.45E-10	2.0E-03	2.9E-13
Naphthalene	0.87	1	7.63E-09	NA	NC
Tetrachloroethene	0.0032	1	2.85E-11	2.0E-02	5.7E-13
Toluene	0.016	1	1.36E-10	NA	NC
Trichloroethene	0.011	1	1.01E-10	4.6E-02	4.6E-12
Vinyl Chloride	0.0059	1	5.16E-11	1.4E+00	7.2E-11
Xylene (Total)	0.038	1	3.31E-10	NA	NC
Styrene	0.0043	1	3.78E-11	3.0E-02	1.1E-12
1,2-Dichloropropane	0.0033	1	2.94E-11	6.8E-02	2.0E-12
1,2,3-Trichloropropane	0.0032	1	2.85E-11	3.0E+01	8.5E-10
1,4-Dioxane	0.12	1	1.02E-09	1.0E-01	1.0E-10
2,4-Dimethylphenol	0.67	1	5.84E-09	NA	NC
1-Methylnaphthalene	2.6	1	2.32E-08	2.9E-02	6.7E-10
2-Methylnaphthalene	0.96	1	8.44E-09	NA	NC
2-Methylphenol	0.66	1	5.81E-09	NA	NC
4-Methylphenol	1.5	1	1.35E-08	NA	NC
Acenaphthene	1.2	1	1.05E-08	NA	NC
Acenaphthylene	0.78	1	6.86E-09	NA	NC
Anthracene	1.9	1	1.68E-08	NA	NC
Benzo(a)Anthracene	2.6	0.3	6.77E-09	7.3E-01	4.9E-09
Benzo(a)Pyrene	1.9	0.3	4.94E-09	7.3E+00	3.6E-08
Benzo(e)Pyrene	2.8	1	2.43E-08	NA	NC
Benzo(b)Fluoranthene	2.3	0.3	6.04E-09	7.3E-01	4.4E-09
Benzo(g,h,i)Perylene	1.1	1	9.29E-09	NA	NC
Benzo(k)Fluoranthene	1.5	0.3	3.99E-09	7.3E-02	2.9E-10
Bis(2-Ethylhexyl)phthalate	717	1	6.29E-06	1.4E-02	8.8E-08
Butylbenzylphthalate	0.68	1	5.98E-09	NA	NC
Chrysene	2.2	0.3	5.76E-09	7.3E-02	4.2E-10
Dibenzo(a,h)anthracene	0.54	0.3	1.43E-09	7.3E+00	1.0E-08
Dibenzofuran	1.0	1	8.99E-09	NA	NC
Di-n-butylphthalate	0.66	1	5.82E-09	NA	NC
Fluoranthene	5.4	1	4.74E-08	NA	NC
Fluorene	1.3	1	1.16E-08	NA	NC
Indeno(1,2,3-cd)Pyrene	1.1	0.3	2.88E-09	7.3E-01	2.1E-09
Phenanthrene	5.3	1	4.64E-08	NA	NC
Phenol	0.99	1	8.70E-09	NA	NC
Pyrene	4.2	1	3.71E-08	NA	NC
bis(2-Chloroethoxy)methane	0.67	1	5.88E-09	NA	NC
Pentachlorophenol	2.7	1	2.37E-08	4.0E-01	9.5E-09
3,3-Dichlorobenzidine	1.3	1	1.15E-08	4.5E-01	5.2E-09
C11-C22 Aromatic Fraction	454	1	3.99E-06	NA	NC
C19-C36 Aliphatic Fraction	665	1	5.83E-06	NA	NC
C5-C8 Aliphatic Fraction	11	1	9.67E-08	NA	NC
C9-C10 Aromatic Fraction	26	1	2.26E-07	NA	NC
C9-C18 Aliphatic Fraction	68	1	5.93E-07	NA	NC
4,4'-DDD	0.0045	1	3.97E-11	2.4E-01	9.5E-12
4,4'-DDE	0.0052	1	4.57E-11	3.4E-01	1.6E-11
4,4'-DDT	0.016	1	1.42E-10	3.4E-01	4.8E-11
alpha-BHC	0.0045	1	3.93E-11	6.3E+00	2.5E-10
beta-BHC	0.0045	1	3.94E-11	1.8E+00	7.1E-11
Dieldrin	0.013	1	1.12E-10	1.6E+01	1.8E-09
Endrin Ketone	0.0046	1	4.03E-11	NA	NC
gamma-BHC	0.0045	1	3.93E-11	1.3E+00	5.1E-11
Heptachlor Epoxide	0.0065	1	5.72E-11	9.1E+00	5.2E-10
Hexachlorobenzene	0.0047	1	4.14E-11	1.6E+00	6.6E-11
Methoxychlor	0.0064	1	5.59E-11	NA	NC
2,4-D	0.14	1	1.22E-09	NA	NC
2,4,5-T	0.058	1	5.13E-10	NA	NC
Dicamba	0.068	1	6.01E-10	NA	NC
Aroclor - 1242	0.24	1	2.09E-09	2.0E+00	4.2E-09
Aroclor - 1248	0.23	1	2.00E-09	2.0E+00	4.0E-09
Aroclor - 1254	0.57	1	4.99E-09	2.0E+00	1.0E-08
Aroclor - 1260	3.3	1	2.90E-08	2.0E+00	5.8E-08
Aroclor - 1262	0.22	1	1.94E-09	2.0E+00	3.9E-09
Aroclor - 1268	0.21	1	1.87E-09	2.0E+00	3.7E-09
Antimony	5.0	1	4.36E-08	NA	NC
Arsenic	53	0.5	2.34E-07	1.5E+00	3.5E-07
Barium	74	1	6.49E-07	NA	NC
Beryllium	0.24	1	2.12E-09	NA	NC
Cadmium	1.8	1	1.59E-08	NA	NC
Chromium (total)	27	1	2.38E-07	NA	NC
Copper	1010	1	8.86E-06	NA	NC
Cyanide	1.3	1	1.14E-08	NA	NC
Iron	81800	1	7.18E-04	NA	NC
Lead	773	1	6.78E-06	NA	NC
Mercury	2.7	1	2.39E-08	NA	NC
Nickel	23	1	2.00E-07	NA	NC
Selenium	9.8	1	8.58E-08	NA	NC
Silver	1.7	1	1.46E-08	NA	NC
Thallium	3.1	1	2.74E-08	NA	NC
Vanadium	48	1	4.24E-07	NA	NC
Zinc	249	1	2.18E-06	NA	NC
				Total $ELCR_{soil\text{-}oral}$:	**6.0E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE III-3

CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF FUGITIVE DUST AND ABSORPTION VIA GASTROINTESTINAL (GI) TRACT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale. See TABLE H-12 for Exposure Point Concentration Derivation

Inhalation of Soil-derived Fugitive Dust

$$ADD_{dust\text{-}GI} = \frac{EPC_{dust} * 1.5 * INH * RAF_{oral} * EF * ED * EP * C2 * C3}{BW * APnc}$$

$$HQ_{dust\text{-}GI} = \frac{ADD_{dust\text{-}GI}}{RfD_{oral}}$$

$$HI_{dust\text{-}GI} = S\ HQ_{dust\text{-}GI}$$

COC	EPC_{dust} EPC2 (mg/m^3)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{dust\text{-}GI}$ (mg/kg-day)	RfD_{oral} Subchronic (mg/kg-day)	$HQ_{dust\text{-}GI}$ (unitless)
1,1,1-Trichloroethane	2.2E-10	1	1.2E-10	7.0E+00	1.6E-11
1,1-Dichloroethane	2.2E-10	1	1.2E-10	2.0E+00	5.8E-11
1,2,3-Trichlorobenzene	1.9E-09	1	9.9E-10	8.0E-03	1.2E-07
1,2,4-Trichlorobenzene	2.0E-08	1	1.0E-08	9.0E-02	1.2E-07
1,2-Dichlorobenzene	5.7E-10	1	3.0E-10	9.0E-01	3.4E-10
1,2-Dichloroethane	6.7E-10	1	3.6E-10	2.0E-02	1.8E-08
1,3-Dichlorobenzene	5.7E-10	1	3.0E-10	9.0E-01	3.4E-10
1,4-Dichlorobenzene	6.4E-10	1	3.4E-10	9.0E-01	3.8E-10
2-Butanone	1.8E-09	1	9.5E-10	6.0E-01	1.6E-09
2-Chlorotoluene	1.9E-10	1	1.0E-10	2.0E-01	5.1E-10
Acetone	5.4E-09	1	2.9E-09	2.7E+00	1.1E-09
Benzene	5.5E-10	1	2.9E-10	1.0E-02	2.9E-08
Carbon Disulfide	1.5E-09	1	8.2E-10	1.0E-01	8.2E-09
Chlorobenzene	1.9E-10	1	1.0E-10	7.0E-02	1.5E-09
Chloroform	3.8E-10	1	2.0E-10	1.0E-02	2.0E-08
cis-1,2-Dichloroethene	2.5E-10	1	1.3E-10	2.0E-02	6.7E-09
Diethylether	2.1E-10	1	1.1E-10	2.0E+00	5.5E-11
Ethylbenzene	1.1E-09	1	5.6E-10	5.0E-02	1.1E-08
Methylene Chloride	9.9E-10	1	5.3E-10	6.0E-03	8.8E-08
Naphthalene	5.2E-08	0.3	8.3E-09	2.0E-01	4.2E-08
Tetrachloroethene	1.9E-10	1	1.0E-10	6.0E-03	1.7E-08
Toluene	9.3E-10	1	4.9E-10	8.0E-01	6.2E-10
Trichloroethene	6.9E-10	1	3.6E-10	5.0E-04	7.3E-07
Vinyl Chloride	3.5E-10	1	1.9E-10	3.0E-03	6.2E-08
Xylene (Total)	2.3E-09	1	1.2E-09	4.0E-01	3.0E-09
Styrene	2.6E-10	1	1.4E-10	2.0E+00	6.9E-11
1,2-Dichloropropane	2.0E-10	1	1.1E-10	NA	NC
1,2,3-Trichloropropane	1.9E-10	1	1.0E-10	8.0E-02	1.3E-09
1,4-Dioxane	7.0E-09	1	3.7E-09	3.0E-02	1.2E-07
2,4-Dimethylphenol	4.0E-08	1	2.1E-08	5.0E-02	4.2E-07
1-Methylnaphthalene	1.6E-07	0.3	2.5E-08	7.0E-03	3.6E-06
2-Methylnaphthalene	5.8E-03	0.3	9.2E-09	4.0E-03	2.3E-06
2-Methylphenol	4.0E-08	1	2.1E-08	5.0E-01	4.2E-08
4-Methylphenol	9.2E-08	1	4.9E-08	5.0E-03	9.8E-06
Acenaphthene	7.2E-08	0.3	1.1E-08	2.0E-01	5.7E-08
Acenaphthylene	4.7E-08	0.3	7.5E-09	3.0E-01	2.5E-08
Anthracene	1.1E-07	0.3	1.8E-08	1.0E+00	1.8E-08
Benzo(a)Anthracene	1.5E-07	0.3	2.5E-08	3.0E-01	8.2E-08
Benzo(a)Pyrene	1.1E-07	0.3	1.8E-08	3.0E-01	6.0E-08
Benzo(e)Pyrene	1.7E-07	1	8.8E-08	NA	NC
Benzo(b)Fluoranthene	1.4E-07	0.3	2.2E-08	3.0E-01	7.3E-08
Benzo(g,h,i)Perylene	6.4E-08	0.3	1.0E-08	3.0E-01	3.4E-08
Benzo(k)Fluoranthene	9.1E-08	0.3	1.4E-08	3.0E-01	4.8E-08
Bis(2-Ethylhexyl)phthalate	4.3E-05	1	2.3E-05	2.0E-02	1.1E-03
Butylbenzylphthalate	4.1E-08	0.96	2.1E-08	2.0E+00	1.0E-08
Chrysene	1.3E-07	0.3	2.1E-08	3.0E-01	7.0E-08
Dibenzo(a,h)anthracene	3.3E-08	0.3	5.2E-09	3.0E-01	1.7E-08
Dibenzofuran	6.1E-08	1	3.3E-08	4.0E-03	8.2E-06
Di-n-butylphthalate	4.0E-08	0.96	2.0E-08	1.0E+00	2.0E-08
Fluoranthene	3.2E-07	0.3	5.2E-08	4.0E-01	1.3E-07
Fluorene	7.9E-08	0.3	1.3E-08	4.0E-01	3.2E-08
Indeno(1,2,3-cd)Pyrene	6.6E-08	0.3	1.0E-08	3.0E-01	3.5E-08
Phenanthrene	3.2E-07	0.3	5.1E-08	3.0E-01	1.7E-07
Phenol	5.9E-08	1	3.2E-08	3.0E-01	1.1E-07
Pyrene	2.5E-07	0.3	4.0E-08	3.0E-01	1.3E-07
bis(2-Chloroethoxy)methane	4.0E-08	1	2.1E-08	3.0E-02	7.1E-07
Pentachlorophenol	1.6E-07	1	8.6E-08	5.0E-03	1.7E-05
3,3-Dichlorobenzidine	7.9E-08	1	4.2E-08	NA	NC
C11-C22 Aromatic Fraction	2.7E-05	0.3	4.3E-06	3.0E-01	1.4E-05
C19-C36 Aliphatic Fraction	4.0E-05	1	2.1E-05	6.0E+00	3.5E-06
C5-C8 Aliphatic Fraction	6.6E-07	1	3.5E-07	4.0E-01	8.8E-07
C9-C10 Aromatic Fraction	1.5E-06	1	8.2E-07	3.0E-01	2.7E-06
C9-C18 Aliphatic Fraction	4.1E-06	1	2.2E-06	1.0E+00	2.2E-06
4,4'-DDD	2.7E-10	1	1.4E-10	5.0E-04	2.9E-07
4,4'-DDE	3.1E-10	1	1.7E-10	5.0E-04	3.3E-07
4,4'-DDT	9.7E-10	1	5.1E-10	5.0E-04	1.0E-06
alpha-BHC	2.7E-10	1	1.4E-10	3.0E-03	4.8E-08
beta-BHC	2.7E-10	1	1.4E-10	3.0E-03	4.8E-08
Dieldrin	7.7E-10	1	4.1E-10	5.0E-05	8.1E-06
Endrin Ketone	2.8E-10	1	1.5E-10	3.0E-04	4.9E-07
gamma-BHC	2.7E-10	1	1.4E-10	3.0E-03	4.8E-08
Heptachlor Epoxide	3.9E-10	1	2.1E-10	1.3E-05	1.6E-05
Hexachlorobenzene	2.8E-10	1	1.5E-10	1.0E-05	1.5E-05
Methoxychlor	3.8E-10	1	2.0E-10	5.0E-03	4.1E-08
2,4-D	8.3E-09	0.96	4.2E-09	1.0E-02	4.2E-07
2,4,5-T	3.5E-09	0.96	1.8E-09	1.0E-01	1.8E-08
Dicamba	4.1E-09	1	2.2E-09	3.0E-02	7.3E-08
Aroclor - 1242	1.4E-08	1	7.6E-09	5.0E-05	1.5E-04
Aroclor - 1248	1.4E-08	1	7.3E-09	5.0E-05	1.5E-04
Aroclor - 1254	3.4E-08	1	1.8E-08	5.0E-05	3.6E-04
Aroclor - 1260	2.0E-07	1	1.1E-07	5.0E-05	2.1E-03
Aroclor - 1262	1.3E-08	1	7.0E-09	5.0E-05	1.4E-04
Aroclor - 1268	1.3E-08	1	6.8E-09	5.0E-05	1.4E-04
Antimony	3.0E-07	1	1.6E-07	4.0E-04	4.0E-04
Arsenic	3.2E-06	0.5	8.5E-07	3.0E-04	2.8E-03
Barium	4.4E-06	1	2.4E-06	7.0E-02	3.4E-05
Beryllium	1.4E-08	1	7.7E-09	5.0E-03	1.5E-06
Cadmium	1.1E-07	1	5.8E-08	1.0E-03	5.8E-05
Chromium (total)	1.6E-06	1	8.7E-07	2.0E-02	4.3E-05
Copper	6.1E-05	0.7	2.3E-05	3.7E-02	6.1E-04
Cyanide	7.8E-08	1	4.1E-08	6.0E-03	6.9E-06
Iron	4.9E-03	0.7	1.8E-03	7.0E-01	2.6E-03
Lead	4.6E-05	0.3	7.4E-06	7.5E-04	9.8E-03
Mercury	1.6E-07	0.5	4.3E-08	3.0E-04	1.4E-04
Nickel	1.4E-06	1	7.3E-07	2.0E-02	3.6E-05
Selenium	5.9E-07	1	3.1E-07	5.0E-03	6.2E-05
Silver	1.0E-07	1	5.3E-08	5.0E-03	1.1E-05
Thallium	1.9E-07	1	1.0E-07	8.0E-04	1.2E-04
Vanadium	2.9E-06	1	1.5E-06	9.0E-03	1.7E-04
Zinc	1.5E-05	1	7.9E-06	3.0E-01	2.6E-05
					2.1E-02

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE III-3 (Continued)

CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES
FOR INHALATION OF FUGITIVE DUST AND ABSORPTION VIA GASTROINTESTINAL (GI) TRACT
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale. See TABLE H-12 for Exposure Point Concentration Derivation

Inhalation of Soil-derived Fugitive Dust

$$LADD_{dust\text{-}GI} = \frac{EPCdust * 1.5 * INH * RAF * EF * ED * EP * C2 * C3}{BW * APc}$$

$ELCR_{dust\text{-}GI}$ = $LADD_{dust\text{-}GI}$ * CSF_{oral}

Total $ELCR_{dust\text{-}GI}$ = S $ELCR_{dust\text{-}GI}$

COC	EPC_{dust} EPC2 (mg/m^3)	$RAF_{oral\text{-}c}$ (unitless)	$LADD_{dust\text{-}GI}$ (µg/m^3)	CSF_{oral} (mg/kg-day)$^{-1}$	$ELCR_{dust\text{-}GI}$ (unitless)
1,1,1-Trichloroethane	2.2E-10	1	8.2E-13	NA	NC
1,1-Dichloroethane	2.2E-10	1	8.2E-13	NA	NC
1,2,3-Trichlorobenzene	1.9E-09	1	7.1E-12	NA	NC
1,2,4-Trichlorobenzene	2.0E-08	1	7.5E-11	2.9E-02	2.2E-12
1,2-Dichlorobenzene	5.7E-10	1	2.2E-12	NA	NC
1,2-Dichloroethane	6.7E-10	1	2.5E-12	9.1E-02	2.3E-13
1,3-Dichlorobenzene	5.7E-10	1	2.2E-12	NA	NC
1,4-Dichlorobenzene	6.4E-10	1	2.4E-12	2.4E-02	5.8E-14
2-Butanone	1.8E-09	1	6.8E-12	NA	NC
2-Chlorotoluene	1.9E-10	1	7.4E-13	NA	NC
Acetone	5.4E-09	1	2.0E-11	NA	NC
Benzene	5.5E-10	1	2.1E-12	5.5E-02	1.2E-13
Carbon Disulfide	1.5E-09	1	5.8E-12	NA	NC
Chlorobenzene	1.9E-10	1	7.4E-13	NA	NC
Chloroform	3.8E-10	1	1.5E-12	NA	NC
cis-1,2-Dichloroethene	2.5E-10	1	9.6E-13	NA	NC
Diethylether	2.1E-10	1	7.8E-13	NA	NC
Ethylbenzene	1.1E-09	1	4.0E-12	NA	NC
Methylene Chloride	9.9E-10	1	3.8E-12	2.0E-03	7.5E-15
Naphthalene	5.2E-08	1	2.0E-10	NA	NC
Tetrachloroethene	1.9E-10	1	7.4E-13	2.0E-02	1.5E-14
Toluene	9.3E-10	1	3.5E-12	NA	NC
Trichloroethene	6.9E-10	1	2.6E-12	4.6E-02	1.2E-13
Vinyl Chloride	3.5E-10	1	1.3E-12	1.4E+00	1.9E-12
Xylene (Total)	2.3E-09	1	8.6E-12	NA	NC
Styrene	2.6E-10	1	9.8E-13	3.0E-02	2.9E-14
1,2-Dichloropropane	2.0E-10	1	7.6E-13	6.8E-02	5.2E-14
1,2,3-Trichloropropane	1.9E-10	1	7.4E-13	3.0E+01	2.2E-11
1,4-Dioxane	7.0E-09	1	2.6E-11	1.0E-01	2.6E-12
2,4-Dimethylphenol	4.0E-08	1	1.5E-10	NA	NC
1-Methylnaphthalene	1.6E-07	1	6.0E-10	2.9E-02	1.7E-11
2-Methylnaphthalene	5.8E-08	1	2.2E-10	NA	NC
2-Methylphenol	4.0E-08	1	1.5E-10	NA	NC
4-Methylphenol	9.2E-08	1	3.5E-10	NA	NC
Acenaphthene	7.2E-08	1	2.7E-10	NA	NC
Acenaphthylene	4.7E-08	1	1.8E-10	NA	NC
Anthracene	1.1E-07	1	4.4E-10	NA	NC
Benzo(a)Anthracene	1.5E-07	0.3	1.8E-10	7.3E-01	1.3E-10
Benzo(a)Pyrene	1.1E-07	0.3	1.3E-10	7.3E+00	9.4E-10
Benzo(e)Pyrene	1.7E-07	1	6.3E-10	NA	NC
Benzo(b)Fluoranthene	1.4E-07	0.3	1.6E-10	7.3E-01	1.1E-10
Benzo(g,h,i)Perylene	6.4E-08	1	2.4E-10	NA	NC
Benzo(k)Fluoranthene	9.1E-08	0.3	1.0E-10	7.3E-02	7.5E-12
Bis(2-Ethylhexyl)phthalate	4.3E-05	1	1.6E-07	1.4E-02	2.3E-09
Butylbenzylphthalate	4.1E-08	1	1.5E-10	NA	NC
Chrysene	1.3E-07	0.3	1.5E-10	7.3E-02	1.1E-11
Dibenzo(a,h)anthracene	3.3E-08	0.3	3.7E-11	7.3E+00	2.7E-10
Dibenzofuran	6.1E-08	1	2.3E-10	NA	NC
Di-n-butylphthalate	4.0E-08	1	1.5E-10	NA	NC
Fluoranthene	3.2E-07	1	1.2E-09	NA	NC
Fluorene	7.9E-08	1	3.0E-10	NA	NC
Indeno(1,2,3-cd)Pyrene	6.6E-08	0.3	7.5E-11	7.3E-01	5.5E-11
Phenanthrene	3.2E-07	1	1.2E-09	NA	NC
Phenol	5.9E-08	1	2.3E-10	NA	NC
Pyrene	2.5E-07	1	9.6E-10	NA	NC
bis(2-Chloroethoxy)methane	4.0E-08	1	1.5E-10	NA	NC
Pentachlorophenol	1.6E-07	1	6.2E-10	4.0E-01	2.5E-10
3,3-Dichlorobenzidine	7.9E-08	1	3.0E-10	4.5E-01	1.3E-10
C11-C22 Aromatic Fraction	2.7E-05	1	1.0E-07	NA	NC
C19-C36 Aliphatic Fraction	4.0E-05	1	1.5E-07	NA	NC
C5-C8 Aliphatic Fraction	6.6E-07	1	2.5E-09	NA	NC
C9-C10 Aromatic Fraction	1.5E-06	1	5.8E-09	NA	NC
C9-C18 Aliphatic Fraction	4.1E-06	1	1.5E-08	NA	NC
4,4'-DDD	2.7E-10	1	1.0E-12	2.4E-01	2.5E-13
4,4'-DDE	3.1E-10	1	1.2E-12	3.4E-01	4.0E-13
4,4'-DDT	9.7E-10	1	3.7E-12	3.4E-01	1.2E-12
alpha-BHC	2.7E-10	1	1.0E-12	6.3E+00	6.4E-12
beta-BHC	2.7E-10	1	1.0E-12	1.8E+00	1.8E-12
Dieldrin	7.7E-10	1	2.9E-12	1.6E+01	4.6E-11
Endrin Ketone	2.8E-10	1	1.0E-12	NA	NC
gamma-BHC	2.7E-10	1	1.0E-12	1.3E+00	1.3E-12
Heptachlor Epoxide	3.9E-10	1	1.5E-12	9.1E+00	1.3E-11
Hexachlorobenzene	2.8E-10	1	1.1E-12	1.6E+00	1.7E-12
Methoxychlor	3.8E-10	1	1.4E-12	NA	NC
2,4-D	8.3E-09	1	3.2E-11	NA	NC
2,4,5-T	3.5E-09	1	1.3E-11	NA	NC
Dicamba	4.1E-09	1	1.6E-11	NA	NC
Aroclor - 1242	1.4E-08	1	5.4E-11	2.0E+00	1.1E-10
Aroclor - 1248	1.4E-08	1	5.2E-11	2.0E+00	1.0E-10
Aroclor - 1254	3.4E-08	1	1.3E-10	2.0E+00	2.6E-10
Aroclor - 1260	2.0E-07	1	7.5E-10	2.0E+00	1.5E-09
Aroclor - 1262	1.3E-08	1	5.0E-11	2.0E+00	1.0E-10
Aroclor - 1268	1.3E-08	1	4.8E-11	2.0E+00	9.7E-11
Antimony	3.0E-07	1	1.1E-09	NA	NC
Arsenic	3.2E-06	0.5	6.1E-09	1.5E+00	9.1E-09
Barium	4.4E-06	1	1.7E-08	NA	NC
Beryllium	1.4E-08	1	5.5E-11	NA	NC
Cadmium	1.1E-07	1	4.1E-10	NA	NC
Chromium (total)	1.6E-06	1	6.2E-09	NA	NC
Copper	6.1E-05	1	2.3E-07	NA	NC
Cyanide	7.8E-08	1	3.0E-10	NA	NC
Iron	4.9E-03	1	1.9E-05	NA	NC
Lead	4.6E-05	1	1.8E-07	NA	NC
Mercury	1.6E-07	1	6.2E-10	NA	NC
Nickel	1.4E-06	1	5.2E-09	NA	NC
Selenium	5.9E-07	1	2.2E-09	NA	NC
Silver	1.0E-07	1	3.8E-10	NA	NC
Thallium	1.9E-07	1	7.1E-10	NA	NC
Vanadium	2.9E-06	1	1.1E-08	NA	NC
Zinc	1.5E-05	1	5.7E-08	NA	NC
					1.6E-08

DRAFT

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE III-4
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST AND RESPIRATORY ABSORPTION

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale and TABLE H-12 for EPC Descriptions

Inhalation of Ambient Air

$$ADE_{dust\text{-}RA} = \frac{EPC_{dust\text{-}RA} * 0.5 * EF * ED * EP * C4}{AP_{nc}}$$

$$HQ_{dust\text{-}RA} = \frac{ADE_{dust\text{-}RA}}{RfC} \qquad HI_{dust\text{-}RA} = \text{S } HQ_{dust\text{-}RA}$$

COC	EPC_{dust} EPC2 (mg/m^3)	$ADE_{dust\text{-}RA}$ (mg/m^3)	RfC Subchronic (mg/m^3)	$HQ_{dust\text{-}RA}$ (unitless)
1,1,1-Trichloroethane	2.2E-10	2.6E-11	5.0E+00	5.2E-12
1,1-Dichloroethane	2.2E-10	2.6E-11	8.0E+00	3.2E-12
1,2,3-Trichlorobenzene	1.9E-09	2.2E-10	2.0E-02	1.1E-08
1,2,4-Trichlorobenzene	2.0E-08	2.3E-09	2.0E-02	1.2E-07
1,2-Dichlorobenzene	5.7E-10	6.8E-11	2.4E+00	2.8E-11
1,2-Dichloroethane	6.7E-10	8.0E-11	7.0E-02	1.1E-09
1,3-Dichlorobenzene	5.7E-10	6.8E-11	2.4E+00	2.8E-11
1,4-Dichlorobenzene	6.4E-10	7.6E-11	2.4E+00	3.2E-11
2-Butanone	1.8E-09	2.1E-10	5.0E+00	4.3E-11
2-Chlorotoluene	1.9E-10	2.3E-11	8.0E-01	2.9E-11
Acetone	5.4E-09	6.4E-10	8.0E-01	8.0E-10
Benzene	5.5E-10	6.6E-11	1.0E-02	6.6E-09
Carbon Disulfide	1.5E-09	1.8E-10	7.0E-01	2.6E-10
Chlorobenzene	1.9E-10	2.3E-11	5.0E-01	4.6E-11
Chloroform	3.8E-10	4.6E-11	6.6E-01	6.9E-11
cis-1,2-Dichloroethene	2.5E-10	3.0E-11	6.0E-02	5.0E-10
Diethylether	2.1E-10	2.4E-11	1.6E+00	1.5E-11
Ethylbenzene	1.1E-09	1.3E-10	9.0E+00	1.4E-11
Methylene Chloride	9.9E-10	1.2E-10	6.0E-01	2.0E-10
Naphthalene	5.2E-08	6.2E-09	3.0E-03	2.1E-06
Tetrachloroethene	1.9E-10	2.3E-11	4.0E-02	5.8E-10
Toluene	9.3E-10	1.1E-10	5.0E+00	2.2E-11
Trichloroethene	6.9E-10	8.2E-11	2.0E-03	4.1E-08
Vinyl Chloride	3.5E-10	4.2E-11	1.0E-01	4.2E-10
Xylene (Total)	2.3E-09	2.7E-10	4.0E-01	6.7E-10
Styrene	2.6E-10	3.1E-11	3.0E+00	1.0E-11
1,2-Dichloropropane	2.0E-10	2.4E-11	1.2E-02	2.0E-09
1,2,3-Trichloropropane	1.9E-10	2.3E-11	3.0E-04	7.7E-08
1,4-Dioxane	7.0E-09	8.3E-10	3.0E-02	2.8E-08
2,4-Dimethylphenol	4.0E-08	4.7E-09	2.0E-01	2.4E-08
1-Methylnaphthalene	1.6E-07	1.9E-08	5.0E-01	3.8E-08
2-Methylnaphthalene	5.8E-08	6.8E-09	5.0E-01	1.4E-08
2-Methylphenol	4.0E-08	4.7E-09	1.8E-01	2.7E-08
4-Methylphenol	9.2E-08	1.1E-08	1.2E-01	9.1E-08
Acenaphthene	7.2E-08	8.5E-09	5.0E-01	1.7E-08
Acenaphthylene	4.7E-08	5.6E-09	5.0E-01	1.1E-08
Anthracene	1.1E-07	1.4E-08	5.0E-01	2.7E-08
Benzo(a)Anthracene	1.5E-07	1.8E-08	5.0E-01	3.7E-08
Benzo(a)Pyrene	1.1E-07	1.3E-08	5.0E-01	2.7E-08
Benzo(e)Pyrene	1.7E-07	2.0E-08	NA	NC
Benzo(b)Fluoranthene	1.4E-07	1.6E-08	5.0E-01	3.3E-08
Benzo(g,h,i)Perylene	6.4E-08	7.5E-09	5.0E-01	1.5E-08
Benzo(k)Fluoranthene	9.1E-08	1.1E-08	5.0E-01	2.2E-08
Bis(2-Ethylhexyl)phthalate	4.3E-05	5.1E-06	7.0E-03	7.3E-04
Butylbenzylphthalate	4.1E-08	4.9E-09	NA	NC
Chrysene	1.3E-07	1.6E-08	5.0E-01	3.1E-08
Dibenzo(a,h)anthracene	3.3E-08	3.9E-09	5.0E-01	7.7E-09
Dibenzofuran	6.1E-08	7.3E-09	NA	NC
Di-n-butylphthalate	4.0E-08	4.7E-09	NA	NC
Fluoranthene	3.2E-07	3.8E-08	5.0E-01	7.7E-08
Fluorene	7.9E-08	9.4E-09	5.0E-01	1.9E-08
Indeno(1,2,3-cd)Pyrene	6.6E-08	7.8E-09	5.0E-01	1.6E-08
Phenanthrene	3.2E-07	3.8E-08	5.0E-01	7.5E-08
Phenol	5.9E-08	7.1E-09	2.6E-01	2.7E-08
Pyrene	2.5E-07	3.0E-08	5.0E-01	6.0E-08
bis(2-Chloroethoxy)methane	4.0E-08	4.8E-09	NA	NC
Pentachlorophenol	1.6E-07	1.9E-08	7.0E-05	2.8E-04
3,3-Dichlorobenzidine	7.9E-08	9.3E-09	NA	NC
C11-C22 Aromatic Fraction	2.7E-05	3.2E-06	5.0E-01	6.5E-06
C19-C36 Aliphatic Fraction	4.0E-05	4.7E-06	NA	NC
C5-C8 Aliphatic Fraction	6.6E-07	7.9E-08	2.0E-01	3.9E-07
C9-C10 Aromatic Fraction	1.5E-06	1.8E-07	5.0E-01	3.7E-07
C9-C18 Aliphatic Fraction	4.1E-06	4.8E-07	6.0E-01	8.0E-07
4,4'-DDD	2.7E-10	3.2E-11	1.8E-03	1.8E-08
4,4'-DDE	3.1E-10	3.7E-11	1.8E-03	2.1E-08
4,4'-DDT	9.7E-10	1.1E-10	1.8E-03	6.6E-08
alpha-BHC	2.7E-10	3.2E-11	1.1E-03	2.9E-08
beta-BHC	2.7E-10	3.2E-11	1.1E-03	2.9E-08
Dieldrin	7.7E-10	9.1E-11	1.8E-04	5.2E-07
Endrin Ketone	2.8E-10	3.3E-11	1.1E-03	3.0E-08
gamma-BHC	2.7E-10	3.2E-11	1.1E-02	2.9E-09
Heptachlor Epoxide	3.9E-10	4.6E-11	4.6E-05	1.0E-06
Hexachlorobenzene	2.8E-10	3.4E-11	4.0E-05	8.4E-07
Methoxychlor	3.8E-10	4.5E-11	1.8E-02	2.5E-09
2,4-D	8.3E-09	9.9E-10	NA	NC
2,4,5-T	3.5E-09	4.2E-10	NA	NC
Dicamba	4.1E-09	4.9E-10	NA	NC
Aroclor - 1242	1.4E-08	1.7E-09	2.0E-05	8.5E-05
Aroclor - 1248	1.4E-08	1.6E-09	2.0E-05	8.1E-05
Aroclor - 1254	3.4E-08	4.1E-09	2.0E-05	2.0E-04
Aroclor - 1260	2.0E-07	2.4E-08	2.0E-05	1.2E-03
Aroclor - 1262	1.3E-08	1.6E-09	2.0E-05	7.9E-05
Aroclor - 1268	1.3E-08	1.5E-09	2.0E-05	7.6E-05
Antimony	3.0E-07	3.5E-08	1.0E-02	3.5E-06
Arsenic	3.2E-06	3.8E-07	2.0E-05	1.9E-02
Barium	4.4E-06	5.3E-07	5.0E-03	1.1E-04
Beryllium	1.4E-08	1.7E-09	2.0E-05	8.6E-05
Cadmium	1.1E-07	1.3E-08	2.0E-05	6.5E-04
Chromium (total)	1.6E-06	1.9E-07	3.0E-04	6.5E-04
Copper	6.1E-05	7.2E-06	3.0E-03	2.4E-03
Cyanide	7.8E-08	9.3E-09	3.0E-03	3.1E-06
Iron	4.9E-03	5.8E-04	NA	NC
Lead	4.6E-05	5.5E-06	1.0E-03	5.5E-03
Mercury	1.6E-07	1.9E-08	3.0E-04	6.5E-05
Nickel	1.4E-06	1.6E-07	1.0E-03	1.6E-04
Selenium	5.9E-07	7.0E-08	3.0E-03	2.3E-05
Silver	1.0E-07	1.2E-08	1.4E-04	8.4E-05
Thallium	1.9E-07	2.2E-08	1.4E-05	1.6E-03
Vanadium	2.9E-06	3.4E-07	1.0E-03	3.4E-04
Zinc	1.5E-05	1.8E-06	1.4E-03	1.3E-03
			$HI_{dust\text{-}RA}$:	**3.5E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

TABLE III-4 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF FUGITIVE DUST AND RESPIRATORY ABSORPTION

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale and TABLE H-12 for EPC Descriptions

Inhalation of Ambient Air

$$LADE_{dust\text{-}RA} = \frac{EPC_{dust\text{-}RA} * 0.S * EF * ED * EP * C4 * C5}{AP_c}$$

$$ELCR_{dust\text{-}RA} = LADE_{dust\text{-}RA} * UR \qquad \text{Total } ELCR_{dust\text{-}RA} = S\ ELCR_{dust\text{-}RA}$$

DRAFT

COC	EPC_{dust} EPC2 (mg/m^3)	$LADE_{dust\text{-}RA}$ (µg/m^3)	UR (µg/m^3)$^{-1}$	$ELCR_{dust\text{-}RA}$ (unitless)
1,1,1-Trichloroethane	2.2E-10	1.8E-10	NA	NC
1,1-Dichloroethane	2.2E-10	1.8E-10	1.6E-06	2.9E-16
1,2,3-Trichlorobenzene	1.9E-09	1.6E-09	NA	NC
1,2,4-Trichlorobenzene	2.0E-08	1.7E-08	NA	NC
1,2-Dichlorobenzene	5.7E-10	4.9E-10	NA	NC
1,2-Dichloroethane	6.7E-10	5.7E-10	2.6E-05	1.5E-14
1,3-Dichlorobenzene	5.7E-10	4.9E-10	NA	NC
1,4-Dichlorobenzene	6.4E-10	5.4E-10	6.9E-06	3.7E-15
2-Butanone	1.8E-09	1.5E-09	NA	NC
2-Chlorotoluene	1.9E-10	1.6E-10	NA	NC
Acetone	5.4E-09	4.6E-09	NA	NC
Benzene	5.5E-10	4.7E-10	7.8E-06	3.7E-15
Carbon Disulfide	1.5E-09	1.3E-09	NA	NC
Chlorobenzene	1.9E-10	1.6E-10	NA	NC
Chloroform	3.8E-10	3.3E-10	2.3E-05	7.5E-15
cis-1,2-Dichloroethene	2.5E-10	2.2E-10	NA	NC
Diethylether	2.1E-10	1.7E-10	NA	NC
Ethylbenzene	1.1E-09	9.0E-10	NA	NC
Methylene Chloride	9.9E-10	8.4E-10	1.0E-08	8.4E-18
Naphthalene	5.2E-08	4.4E-08	NA	NC
Tetrachloroethene	1.9E-10	1.7E-10	3.0E-06	5.0E-16
Toluene	9.3E-10	7.9E-10	NA	NC
Trichloroethene	6.9E-10	5.8E-10	5.0E-06	2.9E-15
Vinyl Chloride	3.5E-10	3.0E-10	8.8E-06	2.6E-15
Xylene (Total)	2.3E-09	1.9E-09	NA	NC
Styrene	2.6E-10	2.2E-10	5.7E-07	1.3E-16
1,2-Dichloropropane	2.0E-10	1.7E-10	1.9E-05	3.2E-15
1,2,3-Trichloropropane	1.9E-10	1.7E-10	NA	NC
1,4-Dioxane	7.0E-09	5.9E-09	5.0E-06	3.0E-14
2,4-Dimethylphenol	4.0E-08	3.4E-08	NA	NC
1-Methylnaphthalene	1.6E-07	1.3E-07	NA	NC
2-Methylnaphthalene	5.8E-08	4.9E-08	NA	NC
2-Methylphenol	4.0E-08	3.4E-08	NA	NC
4-Methylphenol	9.2E-08	7.8E-08	NA	NC
Acenaphthene	7.2E-08	6.1E-08	NA	NC
Acenaphthylene	4.7E-08	4.0E-08	NA	NC
Anthracene	1.1E-07	9.7E-08	NA	NC
Benzo(a)Anthracene	1.5E-07	1.3E-07	2.1E-04	2.7E-11
Benzo(a)Pyrene	1.1E-07	9.6E-08	2.1E-03	2.0E-10
Benzo(e)Pyrene	1.7E-07	1.4E-07	NA	NC
Benzo(b)Fluoranthene	1.4E-07	1.2E-07	2.1E-04	2.4E-11
Benzo(g,h,i)Perylene	6.4E-08	5.4E-08	NA	NC
Benzo(k)Fluoranthene	9.1E-08	7.7E-08	2.1E-05	1.6E-12
Bis(2-Ethylhexyl)phthalate	4.3E-05	3.6E-05	1.3E-06	4.7E-11
Butylbenzylphthalate	4.1E-08	3.5E-08	NA	NC
Chrysene	1.3E-07	1.1E-07	2.1E-05	2.3E-12
Dibenzo(a,h)anthracene	3.3E-08	2.8E-08	2.1E-03	5.8E-11
Dibenzofuran	6.1E-08	5.2E-08	NA	NC
Di-n-butylphthalate	4.0E-08	3.4E-08	NA	NC
Fluoranthene	3.2E-07	2.7E-07	NA	NC
Fluorene	7.9E-08	6.7E-08	NA	NC
Indeno(1,2,3-cd)Pyrene	6.6E-08	5.6E-08	2.1E-04	1.2E-11
Phenanthrene	3.2E-07	2.7E-07	NA	NC
Phenol	5.9E-08	5.0E-08	NA	NC
Pyrene	2.5E-07	2.2E-07	NA	NC
bis(2-Chloroethoxy)methane	4.0E-08	3.4E-08	NA	NC
Pentachlorophenol	1.6E-07	1.4E-07	1.0E-04	1.4E-11
3,3-Dichlorobenzidine	7.9E-08	6.7E-08	1.3E-04	8.7E-12
C11-C22 Aromatic Fraction	2.7E-05	2.3E-05	NA	NC
C19-C36 Aliphatic Fraction	4.0E-05	3.4E-05	NA	NC
C5-C8 Aliphatic Fraction	6.6E-07	5.6E-07	NA	NC
C9-C10 Aromatic Fraction	1.5E-06	1.3E-06	NA	NC
C9-C18 Aliphatic Fraction	4.1E-06	3.4E-06	NA	NC
4,4'-DDD	2.7E-10	2.3E-10	6.9E-05	1.6E-14
4,4'-DDE	3.1E-10	2.7E-10	9.7E-05	2.6E-14
4,4'-DDT	9.7E-10	8.2E-10	9.7E-05	8.0E-14
alpha-BHC	2.7E-10	2.3E-10	1.8E-03	4.1E-13
beta-BHC	2.7E-10	2.3E-10	5.3E-04	1.2E-13
Dieldrin	7.7E-10	6.5E-10	4.6E-03	3.0E-12
Endrin Ketone	2.8E-10	2.3E-10	NA	NC
gamma-BHC	2.7E-10	2.3E-10	3.7E-04	8.5E-14
Heptachlor Epoxide	3.9E-10	3.3E-10	2.6E-03	8.6E-13
Hexachlorobenzene	2.8E-10	2.4E-10	4.6E-04	1.1E-13
Methoxychlor	3.8E-10	3.2E-10	NA	NC
2,4-D	8.3E-09	7.1E-09	NA	NC
2,4,5-T	3.5E-09	3.0E-09	NA	NC
Dicamba	4.1E-09	3.5E-09	NA	NC
Aroclor - 1242	1.4E-08	1.2E-08	1.0E-04	1.2E-12
Aroclor - 1248	1.4E-08	1.2E-08	1.0E-04	1.2E-12
Aroclor - 1254	3.4E-08	2.9E-08	1.0E-04	2.9E-12
Aroclor - 1260	2.0E-07	1.7E-07	1.0E-04	1.7E-11
Aroclor - 1262	1.3E-08	1.1E-08	1.0E-04	1.1E-12
Aroclor - 1268	1.3E-08	1.1E-08	1.0E-04	1.1E-12
Antimony	3.0E-07	2.5E-07	NA	NC
Arsenic	3.2E-06	2.7E-06	3.0E-03	8.1E-09
Barium	4.4E-06	3.8E-06	NA	NC
Beryllium	1.4E-08	1.2E-08	2.4E-03	2.9E-11
Cadmium	1.1E-07	9.2E-08	1.8E-03	1.7E-10
Chromium (total)	1.6E-06	1.4E-06	1.2E-02	1.7E-08
Copper	6.1E-05	5.1E-05	NA	NC
Cyanide	7.8E-08	6.6E-08	NA	NC
Iron	4.9E-03	4.2E-03	NA	NC
Lead	4.6E-05	3.9E-05	NA	NC
Mercury	1.6E-07	1.4E-07	NA	NC
Nickel	1.4E-06	1.2E-06	4.8E-04	5.6E-10
Selenium	5.9E-07	5.0E-07	NA	NC
Silver	1.0E-07	8.4E-08	NA	NC
Thallium	1.9E-07	1.6E-07	NA	NC
Vanadium	2.9E-06	2.5E-06	NA	NC
Zinc	1.5E-05	1.3E-05	NA	NC
			Total $ELCR_{dust\text{-}RA}$:	**2.6E-08**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

TABLE III-5
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR DERMAL CONTACT WITH GROUNDWATER

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NONCANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale

See TABLE H-12 for Exposure Point Concentration Derivation

Dermal Contact with Groundwater

$$ADD_{gw\text{-}dermal} = \frac{EPC_{gw} * SA * K_p * EF * ED * EP * RAF * C6 * C7}{BW * AP_{nc}}$$

$$HQ_{gw\text{-}dermal} = \frac{ADD_{gw\text{-}dermal}}{RfD} \qquad HI_{gw\text{-}dermal} = S\ HQ_{gw\text{-}dermal}$$

COC	EPC_{gw} EPC4 (µg/L)	K_p (cm/hr)	RAF (unitless)	$ADD_{gw\text{-}dermal}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{gw\text{-}dermal}$ (unitless)
1,1,1-Trichloroethane	1.5E+00	1.3E-02	1.0E+00	7.0E-08	7.0E+00	9.9E-09
Acetone	1.4E+01	5.2E-04	1.0E+00	2.8E-08	2.7E+00	1.0E-08
Benzene	3.4E+00	1.5E-02	1.0E+00	1.9E-07	1.0E-02	1.9E-05
Carbon Disulfide	1.2E+01	1.1E-02	1.0E+00	5.2E-07	1.0E-01	5.2E-06
Ethylbenzene	4.0E+00	4.8E-02	1.0E+00	7.5E-07	5.0E-02	1.5E-05
Methyl-Tert-Butyl-Ether	1.1E+00	2.5E-03	1.0E+00	1.1E-08	1.0E+00	1.1E-08
Naphthalene	8.2E+00	4.6E-02	1.0E+00	1.4E-06	2.0E-01	7.2E-06
Toluene	3.5E+00	3.1E-02	1.0E+00	4.1E-07	8.0E-01	5.1E-07
Xylene (Total)	5.2E+00	5.2E-02	1.0E+00	1.0E-06	4.0E-01	2.6E-06
1-Methylnaphthalene	9.3E+00	4.6E-02	1.0E+00	1.6E-06	7.0E-03	2.3E-04
2-Methylnaphthalene	1.9E+00	9.0E-02	1.0E+00	6.5E-07	4.0E-03	1.6E-04
4-Methylphenol	9.5E+00	7.5E-03	1.0E+00	2.7E-07	5.0E-03	5.5E-05
Acenaphthene	2.3E+00	8.4E-02	1.1E+00	8.0E-07	2.0E-01	4.0E-06
Acenaphthylene	5.3E-01	1.1E-01	1.1E+00	2.3E-07	3.0E-01	7.8E-07
Anthracene	1.0E+00	1.6E-01	1.1E+00	6.9E-07	1.0E+00	6.9E-07
Benzo(a)Anthracene	9.1E-01	4.6E-01	1.1E+00	1.7E-06	3.0E-01	5.8E-06
Benzo(a)Pyrene	8.3E-01	6.5E-01	1.1E+00	2.3E-06	3.0E-01	7.6E-06
Benzo(b)Fluoranthene	8.7E-01	6.7E-01	1.1E+00	2.5E-06	3.0E-01	8.2E-06
Benzo(g,h,i)Perylene	6.3E-01	8.9E-01	1.1E+00	2.4E-06	3.0E-01	7.9E-06
Benzo(k)Fluoranthene	8.5E-01	6.1E-01	1.1E+00	2.2E-06	3.0E-01	7.3E-06
Chrysene	9.4E-01	4.6E-01	1.1E+00	1.8E-06	3.0E-01	6.0E-06
Dibenzo(a,h)anthracene	5.8E-01	1.4E+00	1.1E+00	3.5E-06	3.0E-01	1.2E-05
Dibenzofuran	1.6E+00	9.5E-02	1.0E+00	5.7E-07	4.0E-03	1.4E-04
Fluoranthene	1.3E+00	2.2E-01	1.1E+00	1.2E-06	4.0E-01	3.0E-06
Fluorene	1.3E+00	1.1E-01	1.1E+00	6.3E-07	4.0E-01	1.6E-06
Indeno(1,2,3-cd)Pyrene	6.1E-01	9.9E-01	1.1E+00	2.5E-06	3.0E-01	8.5E-06
Phenanthrene	2.0E+00	1.4E-01	1.1E+00	1.2E-06	3.0E-01	3.9E-06
Phenol	2.9E+00	4.3E-03	1.0E+00	4.8E-08	3.0E-01	1.6E-07
Pyrene	1.1E+00	2.8E-01	1.1E+00	1.3E-06	3.0E-01	4.3E-06
C11-C22 Aromatic Fraction	1.0E+02	5.2E-01	1.0E+00	2.1E-04	3.0E-01	6.9E-04
C19-C36 Aliphatic Fraction	1.6E+02	2.0E+00	1.0E+00	1.2E-03	6.0E+00	2.1E-04
C5-C8 Aliphatic Fraction	7.6E+01	1.7E-01	1.0E+00	4.8E-05	4.0E-01	1.2E-04
C9-C10 Aromatic Fraction	2.5E+02	1.3E-01	1.0E+00	1.3E-04	3.0E-01	4.2E-04
C9-C18 Aliphatic Fraction	4.0E+02	1.5E+00	1.0E+00	2.2E-03	1.0E+00	2.2E-03
Antimony	3.5E+00	1.0E-03	1.0E+00	1.3E-08	4.0E-04	3.3E-05
Arsenic	6.7E+02	1.0E-03	1.0E+00	2.6E-06	3.0E-04	8.5E-03
Barium	4.6E+01	1.0E-03	1.0E+00	1.8E-07	7.0E-02	2.5E-06
Beryllium	2.7E+00	1.0E-03	1.0E+00	1.0E-08	5.0E-03	2.1E-06
Cadmium	5.9E+00	1.0E-03	2.0E+01	4.5E-07	5.0E-04	9.0E-04
Chromium (total)	7.5E+00	2.0E-03	9.0E+00	5.2E-07	2.0E-02	2.6E-05
Copper	4.5E+01	1.0E-03	1.0E+00	1.7E-07	3.7E-02	4.6E-06
Cyanide	3.2E+01	1.0E-03	1.0E+00	1.2E-07	6.0E-03	2.0E-05
Lead	5.0E+01	1.0E-04	1.0E+00	1.9E-08	7.5E-04	2.5E-05
Mercury	1.4E-01	1.0E-03	6.7E+00	3.5E-09	3.0E-04	1.2E-05
Nickel	3.5E+01	2.0E-04	1.0E+00	2.7E-08	2.0E-02	1.3E-06
Selenium	5.7E+00	1.0E-03	1.0E+00	2.2E-08	5.0E-03	4.3E-06
Thallium	2.6E+00	1.0E-03	1.0E+00	9.8E-09	8.0E-04	1.2E-05
Vanadium	6.4E+01	1.0E-03	1.0E+00	2.5E-07	9.0E-03	2.7E-05
Zinc	2.2E+02	6.0E-04	1.0E+00	5.1E-07	3.0E-01	1.7E-06
					Total $HI_{gw\text{-}dermal}$:	**1.4E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern.

DRAFT

TABLE III-5 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY DOSE AND RISK ESTIMATES FOR DERMAL CONTACT WITH GROUNDWATER

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

Dermal Contact with Groundwater

See TABLE H-13 for Exposure Variables and Rationale

$LADD_{gw\text{-}dermal} = \frac{EPC_{gw} * SA * K_p * EF * ED * EP * RAF * C6 * C7}{BW * AP_c}$

See TABLE H-12 for Exposure Point Concentration Derivation

$ELCR_{gw\text{-}dermal} = LADD_{gw\text{-}dermal} * CSF$ Total $ELCR_{gw\text{-}dermal} =$ S $ELCR_{gw\text{-}dermal}$

COC	EPC_{gw} EPC4 (µg/L)	K_p (unitless)	RAF (unitless)	$LADD_{gw\text{-}dermal}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{gw\text{-}dermal}$ (unitless)
1,1,1-Trichloroethane	1.5E+00	1.3E-02	1.0E+00	5.0E-10	NA	NC
Acetone	1.4E+01	5.2E-04	1.0E+00	2.0E-10	NA	NC
Benzene	3.4E+00	1.5E-02	1.0E+00	1.4E-09	5.5E-02	7.5E-11
Carbon Disulfide	1.2E+01	1.1E-02	1.0E+00	3.7E-09	NA	NC
Ethylbenzene	4.0E+00	4.8E-02	1.0E+00	5.3E-09	NA	NC
Methyl-Tert-Butyl-Ether	1.1E+00	2.5E-03	1.0E+00	7.6E-11	NA	NC
Naphthalene	8.2E+00	4.6E-02	1.0E+00	1.0E-08	NA	NC
Toluene	3.5E+00	3.1E-02	1.0E+00	2.9E-09	NA	NC
Xylene (Total)	5.2E+00	5.2E-02	1.0E+00	7.5E-09	NA	NC
1-Methylnaphthalene	9.3E+00	4.6E-02	1.0E+00	1.2E-08	2.9E-02	3.4E-10
2-Methylnaphthalene	1.9E+00	9.0E-02	1.0E+00	4.6E-09	NA	NC
4-Methylphenol	9.5E+00	7.5E-03	1.0E+00	1.9E-09	NA	NC
Acenaphthene	2.3E+00	8.4E-02	1.0E+00	5.2E-09	NA	NC
Acenaphthylene	5.3E-01	1.1E-01	1.0E+00	1.5E-09	NA	NC
Anthracene	1.0E+00	1.6E-01	1.0E+00	4.5E-09	NA	NC
Benzo(a)Anthracene	9.1E-01	4.6E-01	1.1E+00	1.2E-08	7.3E-01	9.1E-09
Benzo(a)Pyrene	8.3E-01	6.5E-01	1.1E+00	1.6E-08	7.3E+00	1.2E-07
Benzo(b)Fluoranthene	8.7E-01	6.7E-01	1.1E+00	1.8E-08	7.3E-01	1.3E-08
Benzo(g,h,i)Perylene	6.3E-01	8.9E-01	1.0E+00	1.5E-08	NA	NC
Benzo(k)Fluoranthene	8.5E-01	6.1E-01	1.1E+00	1.6E-08	7.3E-02	1.1E-09
Chrysene	9.4E-01	4.6E-01	1.1E+00	1.3E-08	7.3E-02	9.4E-10
Dibenzo(a,h)anthracene	5.8E-01	1.4E+00	1.1E+00	2.5E-08	7.3E+00	1.8E-07
Dibenzofuran	1.6E+00	9.5E-02	1.0E+00	4.0E-09	NA	NC
Fluoranthene	1.3E+00	2.2E-01	1.0E+00	7.9E-09	NA	NC
Fluorene	1.3E+00	1.1E-01	1.0E+00	4.1E-09	NA	NC
Indeno(1,2,3-cd)Pyrene	6.1E-01	9.9E-01	1.1E+00	1.8E-08	7.3E-01	1.3E-08
Phenanthrene	2.0E+00	1.4E-01	1.0E+00	7.6E-09	NA	NC
Phenol	2.9E+00	4.3E-03	1.0E+00	3.4E-10	NA	NC
Pyrene	1.1E+00	2.8E-01	1.0E+00	8.4E-09	NA	NC
C11-C22 Aromatic Fraction	1.0E+02	5.2E-01	1.0E+00	1.5E-06	NA	NC
C19-C36 Aliphatic Fraction	1.6E+02	2.0E+00	1.0E+00	8.8E-06	NA	NC
C5-C8 Aliphatic Fraction	7.6E+01	1.7E-01	1.0E+00	3.4E-07	NA	NC
C9-C10 Aromatic Fraction	2.5E+02	1.3E-01	1.0E+00	9.0E-07	NA	NC
C9-C18 Aliphatic Fraction	4.0E+02	1.5E+00	1.0E+00	1.6E-05	NA	NC
Antimony	3.5E+00	1.0E-03	1.0E+00	9.5E-11	NA	NC
Arsenic	6.7E+02	1.0E-03	1.0E+00	1.8E-08	1.5E+00	2.7E-08
Barium	4.6E+01	1.0E-03	1.0E+00	1.3E-09	NA	NC
Beryllium	2.7E+00	1.0E-03	1.0E+00	7.3E-11	NA	NC
Cadmium	5.9E+00	1.0E-03	1.0E+00	1.6E-10	NA	NC
Chromium (total)	7.5E+00	2.0E-03	1.0E+00	4.1E-10	NA	NC
Copper	4.5E+01	1.0E-03	1.0E+00	1.2E-09	NA	NC
Cyanide	3.2E+01	1.0E-03	1.0E+00	8.7E-10	NA	NC
Lead	5.0E+01	1.0E-04	1.0E+00	1.4E-10	NA	NC
Mercury	1.4E-01	1.0E-03	1.0E+00	3.7E-12	NA	NC
Nickel	3.5E+01	2.0E-04	1.0E+00	1.9E-10	NA	NC
Selenium	5.7E+00	1.0E-03	1.0E+00	1.5E-10	NA	NC
Thallium	2.6E+00	1.0E-03	1.0E+00	7.0E-11	NA	NC
Vanadium	6.4E+01	1.0E-03	1.0E+00	1.8E-09	NA	NC
Zinc	2.2E+02	6.0E-04	1.0E+00	3.7E-09	NA	NC
					Total $ELCR_{gw\text{-}dermal}$:	**3.7E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE III-6
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF AMBIENT AIR

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale and TABLE H-12 for EPC Descriptions	**Inhalation of Ambient Air** $ADE_{amb-air} = \frac{EPC_{amb-air} * EF * ED * EP * C2}{AP_{nc}}$ $HQ_{amb-air} = \frac{ADE_{amb-air}}{RfC}$		$HI_{amb-air} =$	S $HQ_{amb-air}$
COC	**$EPC_{amb-air}$ EPC6** (mg/m^3)	**$ADE_{amb-air}$** (mg/m^3)	**RfC Subchronic** (mg/m^3)	**$HQ_{amb-air}$** (unitless)
1,1,1-Trichloroethane	1.6E-05	3.9E-06	5.0E+00	7.8E-07
Acetone	3.3E-05	7.8E-06	8.0E-01	9.8E-06
Benzene	4.8E-05	1.1E-05	1.0E-02	1.1E-03
Carbon Disulfide	1.8E-04	4.2E-05	7.0E-01	6.0E-05
Ethylbenzene	5.0E-05	1.2E-05	9.0E+00	1.3E-06
Methyl-Tert-Butyl-Ether	1.1E-05	2.6E-06	3.0E+00	8.6E-07
Naphthalene	6.1E-05	1.4E-05	3.0E-03	4.8E-03
Toluene	4.6E-05	1.1E-05	5.0E+00	2.2E-06
Xylene (Total)	6.4E-05	1.5E-05	4.0E-01	3.8E-05
1-Methylnaphthalene	6.8E-05	1.6E-05	5.0E-01	3.2E-05
2-Methylnaphthalene	1.4E-05	3.3E-06	5.0E-01	6.6E-06
Acenaphthene	1.0E-05	2.4E-06	5.0E-01	4.8E-06
Acenaphthylene	1.7E-06	4.1E-07	5.0E-01	8.2E-07
Anthracene	1.8E-06	4.3E-07	5.0E-01	8.6E-07
Benzo(a)Anthracene	3.6E-07	8.5E-08	5.0E-01	1.7E-07
Dibenzofuran	7.5E-07	1.8E-07	NA	NC
Fluorene	3.7E-06	8.8E-07	5.0E-01	1.8E-06
Phenanthrene	2.8E-06	6.6E-07	5.0E-01	1.3E-06
Pyrene	4.6E-07	1.1E-07	5.0E-01	2.2E-07
C11-C22 Aromatic Fraction	8.3E-04	2.0E-04	5.0E-01	3.9E-04
C5-C8 Aliphatic Fraction	1.0E-03	2.5E-04	2.0E-01	1.2E-03
C9-C10 Aromatic Fraction	2.9E-03	6.9E-04	5.0E-01	1.4E-03
C9-C18 Aliphatic Fraction	4.0E-03	9.6E-04	6.0E-01	1.6E-03
Cyanide	8.0E-04	1.9E-04	3.0E-03	6.3E-02
			$HI_{amb-air}$:	**7.4E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE III-6 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR INHALATION OF AMBIENT AIR

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale and TABLE H-12 for EPC Descriptions

Inhalation of Ambient Air

$$LADE_{amb\text{-}air} = \frac{EPC_{amb\text{-}air} * EF * ED * EP * C2 * C5}{AP_c}$$

$ELCR_{amb\text{-}air} = LADE_{amb\text{-}air} * UR$

Total $ELCR_{amb\text{-}air}$ = S $ELCR_{amb\text{-}air}$

COC	$EPC_{amb\text{-}air}$ EPC6 (mg/m^3)	$LADE_{amb\text{-}air}$ (µg/m^3)	UR (µg/m^3)$^{-1}$	$ELCR_{amb\text{-}air}$ (unitless)
1,1,1-Trichloroethane	1.6E-05	2.8E-05	NA	NC
Acetone	3.3E-05	5.6E-05	NA	NC
Benzene	4.8E-05	8.2E-05	7.8E-06	6.4E-10
Carbon Disulfide	1.8E-04	3.0E-04	NA	NC
Ethylbenzene	5.0E-05	8.5E-05	NA	NC
Methyl-Tert-Butyl-Ether	1.1E-05	1.8E-05	NA	NC
Naphthalene	6.1E-05	1.0E-04	NA	NC
Toluene	4.6E-05	7.9E-05	NA	NC
Xylene (Total)	6.4E-05	1.1E-04	NA	NC
1-Methylnaphthalene	6.8E-05	1.2E-04	NA	NC
2-Methylnaphthalene	1.4E-05	2.4E-05	NA	NC
Acenaphthene	1.0E-05	1.7E-05	NA	NC
Acenaphthylene	1.7E-06	2.9E-06	NA	NC
Anthracene	1.8E-06	3.1E-06	NA	NC
Benzo(a)Anthracene	3.6E-07	6.1E-07	2.1E-04	1.3E-10
Dibenzofuran	7.5E-07	1.3E-06	NA	NC
Fluorene	3.7E-06	6.3E-06	NA	NC
Phenanthrene	2.8E-06	4.7E-06	NA	NC
Pyrene	4.6E-07	7.8E-07	NA	NC
C11-C22 Aromatic Fraction	8.3E-04	1.4E-03	NA	NC
C5-C8 Aliphatic Fraction	1.0E-03	1.8E-03	NA	NC
C9-C10 Aromatic Fraction	2.9E-03	4.9E-03	NA	NC
C9-C18 Aliphatic Fraction	4.0E-03	6.8E-03	NA	NC
Cyanide	8.0E-04	1.4E-03	NA	NC
			Total $ELCR_{amb\text{-}air}$:	**7.7E-10**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

TABLE III-7
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR DERMAL CONTACT WITH SEDIMENT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

Dermal Contact with Sediment

See TABLE H-13 for Exposure Variables and Rationale

$ADD_{sed\text{-}dermal} = \dfrac{EPC_{sed} * DCR_{sed} * EF * ED * EP * RAF_{dermal\text{-}nc} * C1}{BW * AP_{nc}}$

See TABLE H-12 for Exposure Point Concentration Derivation

$HQ_{sed\text{-}dermal} = \dfrac{ADD_{sed\text{-}dermal}}{RfD}$

$HI_{sed\text{-}dermal} =$ S $HQ_{sed\text{-}dermal}$

COC	EPC_{sed} EPC7 (mg/kg)	$RAF_{dermal\text{-}nc}$ (unitless)	$ADD_{sed\text{-}dermel}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{sed\text{-}dermel}$ (unitless)
1,2,4-Trimethylbenzene	0.054	1	2.1E-06	NA	NC
1,2-Dichlorobenzene	0.22	0.03	2.5E-07	9.0E-01	2.8E-07
1,3,5-Trimethylbenzene	0.014	1	5.4E-07	1.0E-01	5.4E-06
1,4-Dichlorobenzene	0.20	0.03	2.3E-07	9.0E-01	2.5E-07
2-Butanone	0.044	0.03	5.1E-08	6.0E-01	8.4E-08
2-Chlorotoluene	0.078	1	3.0E-06	2.0E-01	1.5E-05
4-Chlorotoluene	0.014	1	5.5E-07	2.0E-01	2.7E-06
Acetone	0.49	0.03	5.6E-07	2.7E+00	2.1E-07
Benzene	0.032	0.03	3.6E-08	1.0E-02	3.6E-06
Carbon Disulfide	0.058	0.12	2.6E-07	1.0E-01	2.6E-06
Chlorobenzene	0.95	0.03	1.1E-06	7.0E-02	1.5E-05
cis-1,2-Dichloroethene	0.0047	0.03	5.4E-09	2.0E-02	2.7E-07
Diethylether	0.0098	1	3.8E-07	2.0E+00	1.9E-07
Ethylbenzene	0.015	0.03	1.7E-08	5.0E-02	3.4E-07
Isopropylbenzene	0.0060	1	2.3E-07	4.0E-01	5.7E-07
Naphthalene	0.28	0.1	1.1E-06	2.0E-01	5.3E-06
n-Butylbenzene	0.0099	1	3.8E-07	3.0E-01	1.3E-06
n-Propylbenzene	0.0068	1	2.6E-07	3.0E-01	8.7E-07
p-Isopropyltoluene	0.0081	0.1	3.1E-08	3.0E-01	1.0E-07
sec-Butylbenzene	0.0076	1	2.9E-07	3.0E-01	9.7E-07
Toluene	0.013	0.03	1.5E-08	8.0E-01	1.8E-08
Trichloroethene	0.029	0.03	3.3E-08	5.0E-04	6.6E-05
Xylene (Total)	0.022	0.03	2.5E-08	4.0E-01	6.2E-08
2-Methylnaphthalene	0.19	0.1	7.1E-07	4.0E-03	1.8E-04
Acenaphthene	0.37	0.1	1.4E-06	2.0E-01	7.1E-06
Acenaphthylene	0.32	0.1	1.2E-06	3.0E-01	4.0E-06
Anthracene	0.75	0.1	2.9E-06	1.0E+00	2.9E-06
Benzo(a)Anthracene	1.6	0.02	1.2E-06	3.0E-01	4.1E-06
Benzo(a)Pyrene	2.0	0.02	1.5E-06	3.0E-01	5.1E-06
Benzo(b)Fluoranthene	3.1	0.02	2.4E-06	3.0E-01	8.0E-06
Benzo(g,h,i)Perylene	1.4	0.1	5.4E-06	3.0E-01	1.8E-05
Benzo(k)Fluoranthene	1.2	0.02	9.2E-07	3.0E-01	3.1E-06
Bis(2-Ethylhexyl)phthalate	144	0.1	5.5E-04	2.0E-02	2.7E-02
Butylbenzylphthalate	1.3	0.18	9.1E-06	2.0E+00	4.5E-06
Chrysene	2.0	0.02	1.5E-06	3.0E-01	5.0E-06
Dibenzo(a,h)anthracene	0.37	0.02	2.8E-07	3.0E-01	9.3E-07
Di-n-butylphthalate	0.45	0.18	3.1E-06	1.0E+00	3.1E-06
Di-n-octylphthalate	23	0.18	1.6E-04	4.0E-01	4.0E-04
Fluoranthene	3.7	0.1	1.4E-05	4.0E-01	3.5E-05
Fluorene	0.36	0.1	1.4E-06	4.0E-01	3.4E-06
Indeno(1,2,3-cd)Pyrene	1.6	0.02	1.2E-06	3.0E-01	4.1E-06
Phenanthrene	2.3	0.1	8.6E-06	3.0E-01	2.9E-05
Pyrene	3.8	0.1	1.4E-05	3.0E-01	4.8E-05
C11-C22 Aromatic Fraction	613	0.1	2.3E-03	3.0E-01	7.8E-03
C19-C36 Aliphatic Fraction	780	0.2	6.0E-03	6.0E+00	9.9E-04
C9-C18 Aliphatic Fraction	143	0.2	1.1E-03	1.0E+00	1.1E-03
4,4'-DDD	0.016	0.03	1.8E-08	5.0E-04	3.7E-05
4,4'-DDE	0.018	0.03	2.1E-08	5.0E-04	4.2E-05
4,4'-DDT	0.041	0.03	4.7E-08	5.0E-04	9.3E-05
alpha-Chlordane	0.0067	0.04	1.0E-08	5.0E-04	2.1E-05
beta-BHC	0.0030	0.04	4.6E-09	3.0E-03	1.5E-06
Dieldrin	0.024	0.1	9.1E-08	5.0E-05	1.8E-03
Endosulfan I	0.0051	0.1	1.9E-08	6.0E-03	3.2E-06
Endosulfan II	0.0069	0.1	2.6E-08	6.0E-03	4.4E-06
Endrin Ketone	0.015	0.1	5.6E-08	3.0E-04	1.9E-04
2,4-DB (2,4-D Butyric Acid)	0.47	0.18	3.2E-06	8.0E-03	4.0E-04
Dicamba	0.017	0.19	1.2E-07	3.0E-02	4.0E-06
2,4,5-TP/Silvex	0.020	0.18	1.3E-07	8.0E-03	1.7E-05
Dalapon	0.047	0.18	3.2E-07	3.0E-02	1.1E-05
Dichlorprop	0.26	1	1.0E-05	NA	NC
Dinoseb	0.023	0.18	1.6E-07	1.0E-03	1.6E-04
Polychlorinated Biphenyls	2.4	0.1	9.0E-06	5.0E-05	1.8E-01
2,3,7,8-TCDD	0.0000084	0.1	3.2E-11	7.0E-10	4.6E-02
Arsenic	111	0.03	1.3E-04	3.0E-04	4.2E-01
Barium	64	0.1	2.4E-04	7.0E-02	3.5E-03
Cadmium	2.3	0.01	8.8E-07	1.0E-03	8.8E-04
Chromium (III)	88	0.1	3.3E-04	1.5E+00	2.2E-04
Copper	313	0.05	6.5E-04	3.7E-02	1.8E-02
Lead	375	0.006	8.6E-05	7.5E-04	1.1E-01
Mercury	2.5	0.1	9.4E-06	3.0E-04	3.1E-02
Nickel	26	0.2	2.0E-04	2.0E-02	9.9E-03
Silver	1.9	0.3	2.1E-05	5.0E-03	4.3E-03
Zinc	392	0.1	1.5E-03	3.0E-01	5.0E-03
				$HI_{sed\text{-}dermal}$ =	**8.8E-01**

DRAFT

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

TABLE III-7 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR DERMAL CONTACT WITH SEDIMENT

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

Dermal Contact with Sediment

See TABLE H-13 for Exposure Variables and Rationale

$$LADD_{sed\text{-}dermal} = \frac{EPC_{sed} * DCR_{sed} * EF * ED * EP * RAF_{dermal\text{-}c} * C1}{BW * AP_c}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$ELCR_{sed\text{-}dermal} = LADD_{sed\text{-}dermal} * CSF$ Total $ELCR_{sed\text{-}dermal}$ = S $ELCR_{sed\text{-}dermal}$

COC	EPC_{sed} EPC7 (mg/kg)	$RAF_{dermal\text{-}c}$ (unitless)	$LADD_{sed\text{-}dermel}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{sed\text{-}dermel}$ (unitless)
1,2,4-Trimethylbenzene	0.054	1	1.48E-08	NA	NC
1,2-Dichlorobenzene	0.22	1	5.95E-08	NA	NC
1,3,5-Trimethylbenzene	0.014	1	3.84E-09	NA	NC
1,4-Dichlorobenzene	0.20	0.03	1.64E-09	2.4E-02	3.9E-11
2-Butanone	0.044	1	1.20E-08	NA	NC
2-Chlorotoluene	0.078	1	2.11E-08	NA	NC
4-Chlorotoluene	0.014	1	3.90E-09	NA	NC
Acetone	0.49	1	1.32E-07	NA	NC
Benzene	0.032	0.03	2.59E-10	5.5E-02	1.4E-11
Carbon Disulfide	0.058	1	1.58E-08	NA	NC
Chlorobenzene	0.95	1	2.58E-07	NA	NC
cis-1,2-Dichloroethene	0.0047	1	1.29E-09	NA	NC
Diethylether	0.0098	1	2.68E-09	NA	NC
Ethylbenzene	0.015	1	4.01E-09	NA	NC
Isopropylbenzene	0.0060	1	1.64E-09	NA	NC
Naphthalene	0.28	1	7.57E-08	NA	NC
n-Butylbenzene	0.0099	1	2.69E-09	NA	NC
n-Propylbenzene	0.0068	1	1.86E-09	NA	NC
p-Isopropyltoluene	0.0081	1	2.22E-09	NA	NC
sec-Butylbenzene	0.0076	1	2.08E-09	NA	NC
Toluene	0.013	1	3.50E-09	NA	NC
Trichloroethene	0.029	0.03	2.35E-10	4.6E-02	1.1E-11
Xylene (Total)	0.022	1	5.86E-09	NA	NC
2-Methylnaphthalene	0.19	1	5.10E-08	NA	NC
Acenaphthene	0.37	1	1.01E-07	NA	NC
Acenaphthylene	0.32	1	8.67E-08	NA	NC
Anthracene	0.75	1	2.05E-07	NA	NC
Benzo(a)Anthracene	1.6	0.02	8.79E-09	7.3E-01	6.4E-09
Benzo(a)Pyrene	2.0	0.02	1.09E-08	7.3E+00	7.9E-08
Benzo(b)Fluoranthene	3.1	0.02	1.72E-08	7.3E-01	1.3E-08
Benzo(g,h,i)Perylene	1.4	1	3.86E-07	NA	NC
Benzo(k)Fluoranthene	1.2	0.02	6.56E-09	7.3E-02	4.8E-10
Bis(2-Ethylhexyl)phthalate	144	0.1	3.93E-06	1.4E-02	5.5E-08
Butylbenzylphthalate	1.3	1	3.60E-07	NA	NC
Chrysene	2.0	0.02	1.06E-08	7.3E-02	7.8E-10
Dibenzo(a,h)anthracene	0.37	0.02	2.00E-09	7.3E+00	1.5E-08
Di-n-butylphthalate	0.45	1	1.22E-07	NA	NC
Di-n-octylphthalate	23	1	6.28E-06	NA	NC
Fluoranthene	3.7	1	9.98E-07	NA	NC
Fluorene	0.36	1	9.81E-08	NA	NC
Indeno(1,2,3-cd)Pyrene	1.6	0.02	8.75E-09	7.3E-01	6.4E-09
Phenanthrene	2.3	1	6.14E-07	NA	NC
Pyrene	3.8	1	1.02E-06	NA	NC
C11-C22 Aromatic Fraction	613	1	1.67E-04	NA	NC
C19-C36 Aliphatic Fraction	780	1	2.13E-04	NA	NC
C9-C18 Aliphatic Fraction	143	1	3.91E-05	NA	NC
4,4'-DDD	0.016	0.03	1.31E-10	2.4E-01	3.1E-11
4,4'-DDE	0.018	0.03	1.51E-10	3.4E-01	5.1E-11
4,4'-DDT	0.041	0.03	3.33E-10	3.4E-01	1.1E-10
alpha-Chlordane	0.0067	0.04	7.32E-11	3.5E-01	2.6E-11
beta-BHC	0.0030	0.04	3.30E-11	1.8E+00	5.9E-11
Dieldrin	0.024	0.1	6.47E-10	1.6E+01	1.0E-08
Endosulfan I	0.0051	1	1.39E-09	NA	NC
Endosulfan II	0.0069	1	1.89E-09	NA	NC
Endrin Ketone	0.015	1	3.98E-09	NA	NC
2,4-DB (2,4-D Butyric Acid)	0.47	1	1.27E-07	NA	NC
Dicamba	0.017	1	4.54E-09	NA	NC
2,4,5-TP/Silvex	0.020	1	5.34E-09	NA	NC
Dalapon	0.047	1	1.29E-08	NA	NC
Dichlorprop	0.26	1	7.20E-08	NA	NC
Dinoseb	0.023	1	6.22E-09	NA	NC
Polychlorinated Biphenyls	2.4	0.1	6.43E-08	2.0E+00	1.3E-07
2,3,7,8-TCDD	0.0000084	0.1	2.28E-13	1.5E+05	3.4E-08
Arsenic	111	0.03	9.06E-07	1.5E+00	1.4E-06
Barium	64	1	1.75E-05	NA	NC
Cadmium	2.3	1	6.30E-07	NA	NC
Chromium (III)	88	1	2.39E-05	NA	NC
Copper	313	1	8.54E-05	NA	NC
Lead	375	1	1.02E-04	NA	NC
Mercury	2.5	1	6.73E-07	NA	NC
Nickel	26	1	7.06E-06	NA	NC
Silver	1.9	1	5.10E-07	NA	NC
Zinc	392	1	1.07E-04	NA	NC
				Total $ELCR_{sed\text{-}dermal}$:	**1.7E-06**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE III-8
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES
FOR INCIDENTAL INGESTION OF SEDIMENT
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

	Incidental Ingestion of Sediment				
See TABLE H-13 for Exposure Variables and Rationale	$ADD_{sed\text{-}oral} = \frac{EPC_{sed} * IR_{sed} * EF * ED * EP * RAF_{oral\text{-}nc} * C1}{BW * AP_{nc}}$				
See TABLE H-12 for Exposure Point Concentration Derivation	$HQ_{sed\text{-}oral} = \frac{ADD_{sed\text{-}oral}}{RfD}$			$HI_{sed\text{-}oral} =$	S $HQ_{sed\text{-}oral}$
COC	EPC_{sed} EPC7 (mg/kg)	$RAF_{oral\text{-}nc}$ (unitless)	$ADD_{sed\text{-}oral}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{sed\text{-}oral}$ (unitless)
1,2,4-Trimethylbenzene	0.054	1	6.7E-08	NA	NC
1,2-Dichlorobenzene	0.22	1	2.7E-07	9.0E-01	3.0E-07
1,3,5-Trimethylbenzene	0.014	1	1.7E-08	1.0E-01	1.7E-07
1,4-Dichlorobenzene	0.20	1	2.5E-07	9.0E-01	2.7E-07
2-Butanone	0.044	1	5.4E-08	6.0E-01	9.0E-08
2-Chlorotoluene	0.078	1	9.5E-08	2.0E-01	4.8E-07
4-Chlorotoluene	0.014	1	1.8E-08	2.0E-01	8.8E-08
Acetone	0.49	1	6.0E-07	2.7E+00	2.2E-07
Benzene	0.032	1	3.9E-08	1.0E-02	3.9E-06
Carbon Disulfide	0.058	1	7.1E-08	1.0E-01	7.1E-07
Chlorobenzene	0.95	1	1.2E-06	7.0E-02	1.7E-05
cis-1,2-Dichloroethene	0.0047	1	5.8E-09	2.0E-02	2.9E-07
Diethylether	0.0098	1	1.2E-08	2.0E+00	6.0E-09
Ethylbenzene	0.015	1	1.8E-08	5.0E-02	3.6E-07
Isopropylbenzene	0.0060	1	7.4E-09	4.0E-01	1.8E-08
Naphthalene	0.28	0.3	1.0E-07	2.0E-01	5.1E-07
n-Butylbenzene	0.0099	1	1.2E-08	3.0E-01	4.0E-08
n-Propylbenzene	0.0068	1	8.4E-09	3.0E-01	2.8E-08
p-Isopropyltoluene	0.0081	1	1.0E-08	3.0E-01	3.3E-08
sec-Butylbenzene	0.0076	1	9.4E-09	3.0E-01	3.1E-08
Toluene	0.013	1	1.6E-08	8.0E-01	2.0E-08
Trichloroethene	0.029	1	3.5E-08	5.0E-04	7.1E-05
Xylene (Total)	0.022	1	2.6E-08	4.0E-01	6.6E-08
2-Methylnaphthalene	0.19	0.3	6.9E-08	4.0E-03	1.7E-05
Acenaphthene	0.37	0.3	1.4E-07	2.0E-01	6.8E-07
Acenaphthylene	0.32	0.3	1.2E-07	3.0E-01	3.9E-07
Anthracene	0.75	0.3	2.8E-07	1.0E+00	2.8E-07
Benzo(a)Anthracene	1.6	0.3	5.9E-07	3.0E-01	2.0E-06
Benzo(a)Pyrene	2.0	0.3	7.3E-07	3.0E-01	2.4E-06
Benzo(b)Fluoranthene	3.1	0.3	1.2E-06	3.0E-01	3.9E-06
Benzo(g,h,i)Perylene	1.4	0.3	5.2E-07	3.0E-01	1.7E-06
Benzo(k)Fluoranthene	1.2	0.3	4.4E-07	3.0E-01	1.5E-06
Bis(2-Ethylhexyl)phthalate	144	1	1.8E-04	2.0E-02	8.8E-03
Butylbenzylphthalate	1.3	0.96	1.6E-06	2.0E+00	7.8E-07
Chrysene	2.0	0.3	7.2E-07	3.0E-01	2.4E-06
Dibenzo(a,h)anthracene	0.37	0.3	1.4E-07	3.0E-01	4.5E-07
Di-n-butylphthalate	0.45	0.96	5.3E-07	1.0E+00	5.3E-07
Di-n-octylphthalate	23	0.96	2.7E-05	4.0E-01	6.8E-05
Fluoranthene	3.7	0.3	1.3E-06	4.0E-01	3.4E-06
Fluorene	0.36	0.3	1.3E-07	4.0E-01	3.3E-07
Indeno(1,2,3-cd)Pyrene	1.6	0.3	5.9E-07	3.0E-01	2.0E-06
Phenanthrene	2.3	0.3	8.3E-07	3.0E-01	2.8E-06
Pyrene	3.8	0.3	1.4E-06	3.0E-01	4.6E-06
C11-C22 Aromatic Fraction	613	0.3	2.3E-04	3.0E-01	7.5E-04
C19-C36 Aliphatic Fraction	780	1	9.6E-04	6.0E+00	1.6E-04
C9-C18 Aliphatic Fraction	143	1	1.8E-04	1.0E+00	1.8E-04
4,4'-DDD	0.016	1	2.0E-08	5.0E-04	3.9E-05
4,4'-DDE	0.018	1	2.3E-08	5.0E-04	4.5E-05
4,4'-DDT	0.041	1	5.0E-08	5.0E-04	1.0E-04
alpha-Chlordane	0.0067	1	8.2E-09	5.0E-04	1.6E-05
beta-BHC	0.0030	1	3.7E-09	3.0E-03	1.2E-06
Dieldrin	0.024	1	2.9E-08	5.0E-05	5.8E-04
Endosulfan I	0.0051	1	6.2E-09	6.0E-03	1.0E-06
Endosulfan II	0.0069	1	8.5E-09	6.0E-03	1.4E-06
Endrin Ketone	0.015	1	1.8E-08	3.0E-04	6.0E-05
2,4-DB (2,4-D Butyric Acid)	0.47	0.96	5.5E-07	8.0E-03	6.8E-05
Dicamba	0.017	1	2.0E-08	3.0E-02	6.8E-07
2,4,5-TP/Silvex	0.020	0.96	2.3E-08	8.0E-03	2.9E-06
Dalapon	0.047	0.96	5.6E-08	3.0E-02	1.9E-06
Dichlorprop	0.26	1	3.2E-07	NA	NC
Dinoseb	0.023	0.96	2.7E-08	1.0E-03	2.7E-05
Polychlorinated Biphenyls	2.4	1	2.9E-06	5.0E-05	5.8E-02
2,3,7,8-TCDD	0.0000084	1	1.0E-11	7.0E-10	1.5E-02
Arsenic	111	0.5	6.8E-05	3.0E-04	2.3E-01
Barium	64	1	7.9E-05	7.0E-02	1.1E-03
Cadmium	2.3	1	2.8E-06	1.0E-03	2.8E-03
Chromium (III)	88	1	1.1E-04	1.5E+00	7.2E-05
Copper	313	0.7	2.7E-04	3.7E-02	7.3E-03
Lead	375	0.3	1.4E-04	7.5E-04	1.8E-01
Mercury	2.5	0.5	1.5E-06	3.0E-04	5.1E-03
Nickel	26	1	3.2E-05	2.0E-02	1.6E-03
Silver	1.9	1	2.3E-06	5.0E-03	4.6E-04
Zinc	392	1	4.8E-04	3.0E-01	1.6E-03
				$HI_{sed\text{-}oral}$ =	**5.1E-01**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE III-8 (Continued)
CALCULATION OF AVERAGE DAILY DOSES AND RISK ESTIMATES FOR INCIDENTAL INGESTION OF SEDIMENT
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

Incidental Ingestion of Sediment

See TABLE H-13 for Exposure Variables and Rationale

$$LADD_{sed\text{-}oral} = \frac{EPC_{sed} * IR_{sed} * EF * ED * EP * RAF_{oral\text{-}c} * C1}{BW * AP_c}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$ELCR_{sed\text{-}oral}$ = $LADD_{sed\text{-}oral}$ * CSF

Total $ELCR_{sed\text{-}oral}$ = S $ELCR_{sed\text{-}oral}$

COC	EPC_{sed} EPC7 (mg/kg)	$RAF_{oral\text{-}c}$ (unitless)	$LADD_{sed\text{-}oral}$ (mg/kg-day)	CSF $(mg/kg\text{-}day)^{-1}$	$ELCR_{sed\text{-}oral}$ (unitless)
1,2,4-Trimethylbenzene	0.054	1	4.76E-10	NA	NC
1,2-Dichlorobenzene	0.22	1	1.92E-09	NA	NC
1,3,5-Trimethylbenzene	0.014	1	1.24E-10	NA	NC
1,4-Dichlorobenzene	0.20	1	1.76E-09	2.4E-02	4.2E-11
2-Butanone	0.044	1	3.87E-10	NA	NC
2-Chlorotoluene	0.078	1	6.80E-10	NA	NC
4-Chlorotoluene	0.014	1	1.25E-10	NA	NC
Acetone	0.49	1	4.26E-09	NA	NC
Benzene	0.032	1	2.77E-10	5.5E-02	1.5E-11
Carbon Disulfide	0.058	1	5.07E-10	NA	NC
Chlorobenzene	0.95	1	8.31E-09	NA	NC
cis-1,2-Dichloroethene	0.0047	1	4.16E-11	NA	NC
Diethylether	0.0098	1	8.62E-11	NA	NC
Ethylbenzene	0.015	1	1.29E-10	NA	NC
Isopropylbenzene	0.0060	1	5.28E-11	NA	NC
Naphthalene	0.28	1	2.44E-09	NA	NC
n-Butylbenzene	0.0099	1	8.65E-11	NA	NC
n-Propylbenzene	0.0068	1	5.99E-11	NA	NC
p-Isopropyltoluene	0.0081	1	7.15E-11	NA	NC
sec-Butylbenzene	0.0076	1	6.70E-11	NA	NC
Toluene	0.013	1	1.13E-10	NA	NC
Trichloroethene	0.029	1	2.52E-10	4.6E-02	1.2E-11
Xylene (Total)	0.022	1	1.89E-10	NA	NC
2-Methylnaphthalene	0.19	1	1.64E-09	NA	NC
Acenaphthene	0.37	1	3.26E-09	NA	NC
Acenaphthylene	0.32	1	2.79E-09	NA	NC
Anthracene	0.75	1	6.60E-09	NA	NC
Benzo(a)Anthracene	1.6	0.3	4.25E-09	7.3E-01	3.1E-09
Benzo(a)Pyrene	2.0	0.3	5.25E-09	7.3E+00	3.8E-08
Benzo(b)Fluoranthene	3.1	0.3	8.29E-09	7.3E-01	6.0E-09
Benzo(g,h,i)Perylene	1.4	1	1.24E-08	NA	NC
Benzo(k)Fluoranthene	1.2	0.3	3.17E-09	7.3E-02	2.3E-10
Bis(2-Ethylhexyl)phthalate	144	1	1.26E-06	1.4E-02	1.8E-08
Butylbenzylphthalate	1.3	1	1.16E-08	NA	NC
Chrysene	2.0	0.3	5.14E-09	7.3E-02	3.8E-10
Dibenzo(a,h)anthracene	0.37	0.3	9.65E-10	7.3E+00	7.0E-09
Di-n-butylphthalate	0.45	1	3.92E-09	NA	NC
Di-n-octylphthalate	23	1	2.02E-07	NA	NC
Fluoranthene	3.7	1	3.21E-08	NA	NC
Fluorene	0.36	1	3.16E-09	NA	NC
Indeno(1,2,3-cd)Pyrene	1.6	0.3	4.23E-09	7.3E-01	3.1E-09
Phenanthrene	2.3	1	1.97E-08	NA	NC
Pyrene	3.8	1	3.30E-08	NA	NC
C11-C22 Aromatic Fraction	613	1	5.38E-06	NA	NC
C19-C36 Aliphatic Fraction	780	1	6.85E-06	NA	NC
C9-C18 Aliphatic Fraction	143	1	1.26E-06	NA	NC
4,4'-DDD	0.016	1	1.40E-10	2.4E-01	3.4E-11
4,4'-DDE	0.018	1	1.62E-10	3.4E-01	5.5E-11
4,4'-DDT	0.041	1	3.57E-10	3.4E-01	1.2E-10
alpha-Chlordane	0.0067	1	5.89E-11	3.5E-01	2.1E-11
beta-BHC	0.0030	1	2.65E-11	1.8E+00	4.8E-11
Dieldrin	0.024	1	2.08E-10	1.6E+01	3.3E-09
Endosulfan I	0.0051	1	4.46E-11	NA	NC
Endosulfan II	0.0069	1	6.08E-11	NA	NC
Endrin Ketone	0.015	1	1.28E-10	NA	NC
2,4-DB (2,4-D Butyric Acid)	0.47	1	4.08E-09	NA	NC
Dicamba	0.017	1	1.46E-10	NA	NC
2,4,5-TP/Silvex	0.020	1	1.72E-10	NA	NC
Dalapon	0.047	1	4.16E-10	NA	NC
Dichlorprop	0.26	1	2.32E-09	NA	NC
Dinoseb	0.023	1	2.00E-10	NA	NC
Polychlorinated Biphenyls	2.4	1	2.07E-08	2.0E+00	4.1E-08
2,3,7,8-TCDD	0.0000084	1	7.35E-14	1.5E+05	1.1E-08
Arsenic	111	0.5	4.86E-07	1.5E+00	7.3E-07
Barium	64	1	5.63E-07	NA	NC
Cadmium	2.3	1	2.03E-08	NA	NC
Chromium (III)	88	1	7.69E-07	NA	NC
Copper	313	1	2.75E-06	NA	NC
Lead	375	1	3.29E-06	NA	NC
Mercury	2.5	1	2.17E-08	NA	NC
Nickel	26	1	2.27E-07	NA	NC
Silver	1.9	1	1.64E-08	NA	NC
Zinc	392	1	3.44E-06	NA	NC
				Total $ELCR_{sed\text{-}oral}$:	**8.6E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.
3. A default value of 1 is used when a RAF is otherwise unavailable.

DRAFT

TABLE III-9
CALCULATION OF AVERAGE DAILY EXPOSURES AND RISK ESTIMATES FOR DERMAL CONTACT WITH SURFACE WATER

1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
SUBCHRONIC NON-CANCER EFFECTS

Dermal Contact with Surface Water

See TABLE H-13 for Exposure Variables and Rationale

$$ADD_{sw\text{-}dermal} = \frac{EPC_{sw} * SA * K_p * EF * ED * EP * RAF * C4}{BW * AP_{nc}}$$

See TABLE H-12 for Exposure Point Concentration Derivation

$$HQ_{sw\text{-}dermal} = \frac{ADD_{sw\text{-}dermal}}{RfD} \qquad HI_{sw\text{-}dermal} = S\ HQ_{sw\text{-}dermal}$$

COC	EPC_{sw} EPC8 (ug/L)	K_p (cm/hr)	RAF (unitless)	$ADD_{sw\text{-}dermal}$ (mg/kg-day)	RfD Subchronic (mg/kg-day)	$HQ_{sw\text{-}dermal}$ (unitless)
Naphthalene	4.2E-01	4.6E-02	1.0E+00	2.9E-07	2.0E-01	1.5E-06
Acenaphthene	2.1E-01	8.4E-02	1.1E+00	3.0E-07	2.0E-01	1.5E-06
Anthracene	2.0E-01	1.6E-01	1.1E+00	5.4E-07	1.0E+00	5.4E-07
Benzo(a)Anthracene	1.4E-01	4.6E-01	1.1E+00	1.1E-06	3.0E-01	3.6E-06
Benzo(a)Pyrene	1.8E-01	6.5E-01	1.1E+00	2.0E-06	3.0E-01	6.6E-06
Benzo(b)Fluoranthene	2.8E-01	6.7E-01	1.1E+00	3.2E-06	3.0E-01	1.1E-05
Benzo(k)Fluoranthene	1.0E-01	6.1E-01	1.1E+00	1.0E-06	3.0E-01	3.4E-06
Bis(2-Ethylhexyl)phthalate	6.0E+00	2.4E-02	1.0E+00	2.2E-06	2.0E-02	1.1E-04
Chrysene	2.0E-01	4.6E-01	1.1E+00	1.5E-06	3.0E-01	5.1E-06
Fluoranthene	4.4E-01	2.2E-01	1.1E+00	1.6E-06	4.0E-01	4.0E-06
Indeno(1,2,3-cd)Pyrene	1.7E-01	9.9E-01	1.1E+00	2.8E-06	3.0E-01	9.5E-06
Phenanthrene	2.7E-01	1.4E-01	1.1E+00	6.4E-07	3.0E-01	2.1E-06
Pyrene	2.9E-01	2.8E-01	1.1E+00	1.3E-06	3.0E-01	4.5E-06
Arsenic	3.5E+02	1.0E-03	1.0E+00	5.3E-06	3.0E-04	1.8E-02
Barium	2.7E+01	1.0E-03	1.0E+00	4.2E-07	7.0E-02	6.0E-06
Cadmium	7.6E+00	1.0E-03	2.0E+01	2.3E-06	5.0E-04	4.6E-03
Zinc	3.1E+01	6.0E-04	1.0E+00	2.8E-07	3.0E-01	9.4E-07
					Total $HI_{sw\text{-}dermal}$:	**2.3E-02**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern.

DRAFT

TABLE III-9 (Continued)
CALCULATION OF LIFETIME AVERAGE DAILY DOSE AND RISK ESTIMATES
FOR DERMAL CONTACT WITH SURFACE WATER
1 Horizon Way
Everett, Massachusetts

RECEPTOR: Construction/Utility Workers
CANCER EFFECTS

See TABLE H-13 for Exposure Variables and Rationale

See TABLE H-12 for Exposure Point Concentration Derivation

Dermal Contact with Surface Water

$$LADD_{sw\text{-}dermal} = \frac{EPC_{sw} * SA * K_p * EF * ED * EP * RAF * C4}{BW * AP_n}$$

$ELCR_{sw\text{-}dermal} =$ $LADD_{sw\text{-}dermal} * CSF$ Total $ELCR_{sw\text{-}dermal} =$ S $ELCR_{sw\text{-}dermal}$

COC	**EPC_{sw} EPC8** (ug/L)	**K_p** (unitless)	**RAF** (unitless)	**$LADD_{sw\text{-}dermal}$** (mg/kg-day)	**CSF** $(mg/kg\text{-}day)^{-1}$	**$ELCR_{sw\text{-}dermal}$** (unitless)
Naphthalene	4.2E-01	4.6E-02	1.0E+00	2.1E-09	NA	NC
Acenaphthene	2.1E-01	8.4E-02	1.0E+00	1.9E-09	NA	NC
Anthracene	2.0E-01	1.6E-01	1.0E+00	3.5E-09	NA	NC
Benzo(a)Anthracene	1.4E-01	4.6E-01	1.1E+00	7.7E-09	7.3E-01	5.6E-09
Benzo(a)Pyrene	1.8E-01	6.5E-01	1.1E+00	1.4E-08	7.3E+00	1.0E-07
Benzo(b)Fluoranthene	2.8E-01	6.7E-01	1.1E+00	2.3E-08	7.3E-01	1.6E-08
Benzo(k)Fluoranthene	1.0E-01	6.1E-01	1.1E+00	7.4E-09	7.3E-02	5.4E-10
Bis(2-Ethylhexyl)phthalate	6.0E+00	2.4E-02	1.0E+00	1.6E-08	1.4E-02	2.2E-10
Chrysene	2.0E-01	4.6E-01	1.1E+00	1.1E-08	7.3E-02	8.0E-10
Fluoranthene	4.4E-01	2.2E-01	1.0E+00	1.0E-08	NA	NC
Indeno(1,2,3-cd)Pyrene	1.7E-01	9.9E-01	1.1E+00	2.0E-08	7.3E-01	1.5E-08
Phenanthrene	2.7E-01	1.4E-01	1.0E+00	4.1E-09	NA	NC
Pyrene	2.9E-01	2.8E-01	1.0E+00	8.7E-09	NA	NC
Arsenic	3.5E+02	1.0E-03	1.0E+00	3.8E-08	1.5E+00	5.7E-08
Barium	2.7E+01	1.0E-03	1.0E+00	3.0E-09	NA	NC
Cadmium	7.6E+00	1.0E-03	1.0E+00	8.3E-10	NA	NC
Zinc	3.1E+01	6.0E-04	1.0E+00	2.0E-09	NA	NC
					Total $ELCR_{sw\text{-}dermal}$:	**2.0E-07**

Notes:
1. Only COCs that are detected at this exposure point are displayed.
2. COC = Constituent of Concern; NA = Not Applicable/Not Available; NC = Not Calculated.

DRAFT

GZA

Proactive by Design

APPENDIX I

PIP COMMENTS AND RESPONSES TO COMMENTS

DRAFT

SOMERVILLE
PUBLIC LIBRARY